

Identifying Your Drought Risk

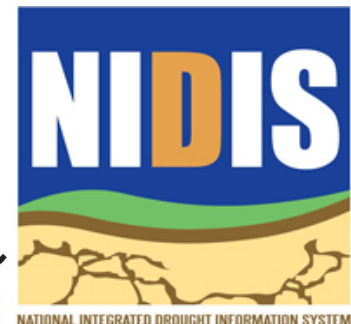


Deborah J. Bathke
Michael J. Hayes

Building Drought Early Warning Capacity in Montana

March 17 – 18, 2015

Bozeman, MT



Overview of NDMC's Drought Risk Atlas (DRA)

Outline

Interactive activity using the DRA

Wrap up and report out

What is the Drought Risk Atlas?



WHAT

- Decision Support Tool
- Visualize & assess drought risk
- Historical drought indices & climatology
- Gridded maps

WHERE

- U.S.
- 3,059 Stations (COOP)
- 139 unique climate regimes

WHEN

- Minimum 40 years of data
- Data for weekly, monthly, & annual time steps

WHY

- How does the drought compare historically in terms of magnitude, frequency, and duration

WHO

- By NDMC
- With: NOAA CPO, NIDIS, USDA RMA, HPRCC, AASC
- For a wide range of decision makers

Questions that we will explore today:

- How did the drought in the early 2000s compare to other historical droughts?
- How severe was this drought?
- How long have droughts like this lasted?
- How frequently does a drought like this happen?

Go to

<http://droughtatlas.unl.edu>

Welcome to the Drought Risk Atlas - Internet Explorer

http://droughtatlas.unl.edu/

Login

Sunday, March 15, 2015

 **Drought Risk Atlas**

Home Map Viewer **Data** Methodology About Help

Current Location >

Welcome

Introduction

The idea of updating and expanding a national drought atlas was developed from the original Drought Atlas that was done in conjunction with the United States Army Corps of Engineers by Hoskings, Wallis and Guttman in the early 1990s. The original Drought Atlas consisted of those stations in the Historical Climate Network (HCN), numbering approximately 1,000 stations. The period of record at the time was limited, as many stations only had records from the 1940s to present, and these data points were put into their respective climate divisions. A monthly time step was used to calculate the Palmer Drought Severity Index (PDSI). The new Drought Risk Atlas brings precise climatological data down to spatial scales that would allow decision makers to use this tool to better understand drought in their respective region and to make better decisions.

For the new national Drought Risk Atlas, the idea was to expand the data both in the number of stations analyzed and the period of record to include the most complete long-term stations, some of which are not part of the HCN. Using a weekly time-step to calculate multiple drought indices at each station location, not on a climate division scale, allows for a more precise representation of drought histories. The Standardized Precipitation Index (SPI), Standardized Precipitation-Evapotranspiration Index (SPEI), Palmer Drought Severity Index (PDSI), Deciles, United States Drought Monitor and other climatological data are included in the new Drought Risk Atlas. Along with the climatological data, gridded maps created on a weekly time-step are available for the entire United States.

Map Viewer

View gridded datasets for the continental United States.

Data

Select a station and view data for a number of drought indices. Frequency statistics of drought thresholds, drought period information and index comparisons are also available.

Methodology

Learn about the criteria used to select the stations, the drought indices chosen, and more.

About

An overview of why the Drought Risk Atlas was created and who was involved.

Help

Instructions on how to use the various features and tools of the Drought Risk Atlas.

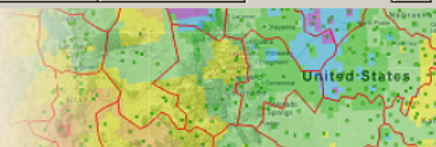
Select station by
clicking on data

Demonstration

How does the drought of the 2000s compare to historical droughts?



Drought Risk Atlas



Home

Map Viewer

Data

Methodology

About

Help



Current Location » Data

Climate Data

Selected Atlas Station

#2
Click search to bring
up a map of stations

Use one of the options to select a station

Close [x]

By State

Montana

Search

By Station Name

Search

By Location

Enter a latitude and longitude (in decimal degrees) or click on the map.

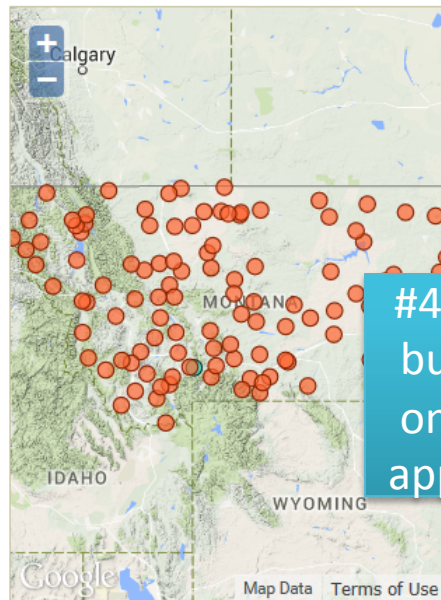
Latitude

Longitude

Search Radius
25 (miles)

Search

Station Map



#4 click
button
once it
appears

Dataset

☐ Raw Data ☒ Serially Complete

Note: The PDSI and Self-calibrated PDSI are only available for the Serially Complete dataset.

Station List

Select a station

the map.

date se

Update Selection

41008: BOULDER

41044: BOZEMAN MONTANA SU

241047: BOZEMAN 6 W EXP FARM

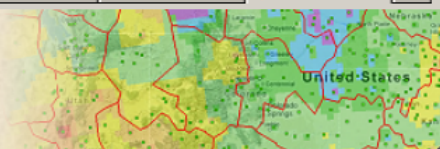
241084: BRANDENBERG

241085: BRENETTE

#3
Scroll to
BOZEMAN MONTANA SU
and click



Drought Risk Atlas

[Home](#)[Map Viewer](#)[Data](#)[Methodology](#)[About](#)[Help](#)

Current Location » Data

Climate Data

Selected Atlas Station: **241044 (BOZEMAN MONTANA SU)**

Menu shows a variety of options

[Select New Station](#)[Station](#)[Climate](#)[Deciles](#)[SPI](#)[SPEI](#)[PDSI](#)[SC-PDSI](#)[Drought Monitor](#)[Drought Periods](#)[Compare Indices](#)[Frequencies](#)

241044: BOZEMAN MONTANA SU

Latitude

45.662

Longitude

-111.045

Elevation (ft)

4913

State

Montana

County

Gallatin

Climate Division

2

Time Period

1/1/1908 - 12/31/2012

Years on Record

104

Precipitation Only

No

[Download Metadata](#)

Atlas Station General Information

Each station in the Drought Risk Atlas is assigned to a homogeneous region or cluster with stations that have similar precipitation climatologies. The station is highlighted with its homogeneous cluster below, and all the other recording stations in the cluster are listed as well. All of the stations in the cluster are also listed to give the user an idea of the options they can consider when studying the

Climate

Deciles

SPI & other indices

Drought Monitor

Drought Periods

Compare Indices

Frequencies



Date

to 12/31/2012

Period

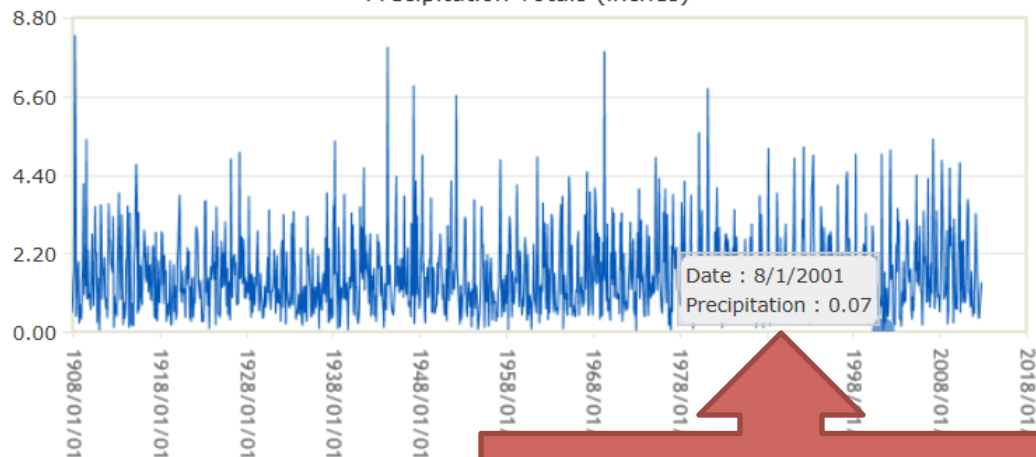
#2

We can switch our view of the data at any time using these icons

Results for **BOZEMAN MONTANA SU (241044)** between 1/1/1908 and 12/31/2012, aggregated by month.

Note: these precipitation totals may include days with no data values and these temperature averages may include days with no data values. Please see the tabular datasets for more information.

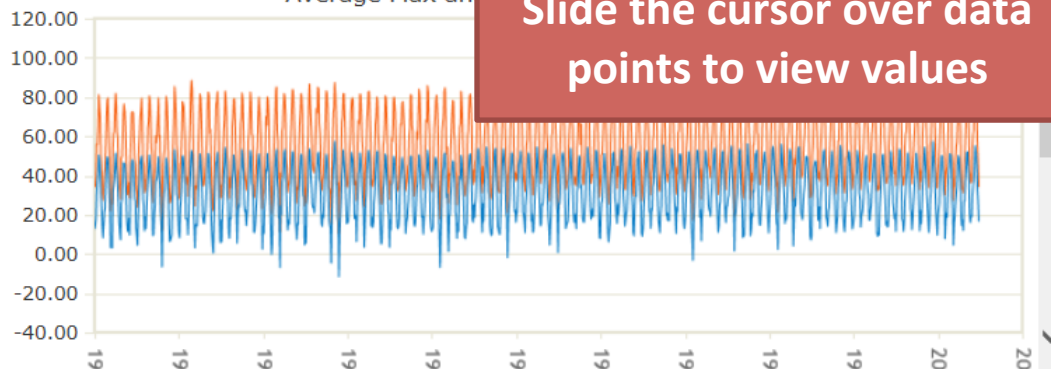
Precipitation Totals (inches)



#1

Slide the cursor over data points to view values

Average Max and Min





Date
 1/1/1908 12/31/2012
 Period of Rec

#1

The star icon lets us
 see temperature &
 precipitation
 rankings

How does the 2000s
 drought compare to
 historical
 in terms of
**TEMPERATURE &
 PRECIPITATION**

Results for **BOZEMAN MONTANA SU (241044)** between 1/1/1908 and 12/31/2012,
 aggregated by month.

Precipitation

Driest

Rank	Date	Total (in.)
1	2/1/1973	0.04
2	3/1/1911	0.05
3	11/1/1939	0.05
4	2/1/1977	0.05
5	5/1/1958	0.06
6	11/1/1954	0.07
7	1/1/1961	0.07
8	8/1/2001	0.07
9	11/1/1923	0.08
10	9/1/1964	0.08

Wettest

Rank	Date	Total (in.)
1	5/1/1908	8.31
2	6/1/1944	7.98
3		
4		
5		
6		
7		
8		
9		
10		

August 2001
 is the most
 recent drought
 to make the
 top 10 driest
 years

Temperature - Warmest

TMax

Rank	Date	Average (°F)
1	7/1/2007	92.26
2	7/1/2003	89.90
3	7/1/2006	89.07
4	8/1/2003	88.61
5	7/1/1919	88.07
6	8/1/2001	87.77

TMin

Rank	Date	Average (°F)
1	7/1/2007	71.26
2	7/1/2003	69.90
3	7/1/2006	69.07
4	8/1/2003	68.61
5	7/1/1919	68.07
6	8/1/2001	67.77

August 2001
 makes the top 10
 for warmest
 temperature but so
 do others from the
 mid 2000s

Investigating the 2000's



Current Location » Data

Climate Data

#2

Select your date & boundary

#1

Click on the Drought Monitor tab

#3

We can see that severe to extreme drought conditions persisted in the HUC 4 region from 2001 - 2006

Date

1/1/2000 to 03/10/2015
Station start date: 1/1/1908

The Drought Monitor is only available starting on 1/1/2000.

Boundary

Select a DM boundary

- State (Montana)
- County (Gallatin)
- Climate Division (2)
- HUC-2 (Missouri)
- HUC-4 (Missouri Headwaters)
- HUC-6 (Missouri Headwaters)
- HUC-8 (Gallatin, Montana, Wyoming.)

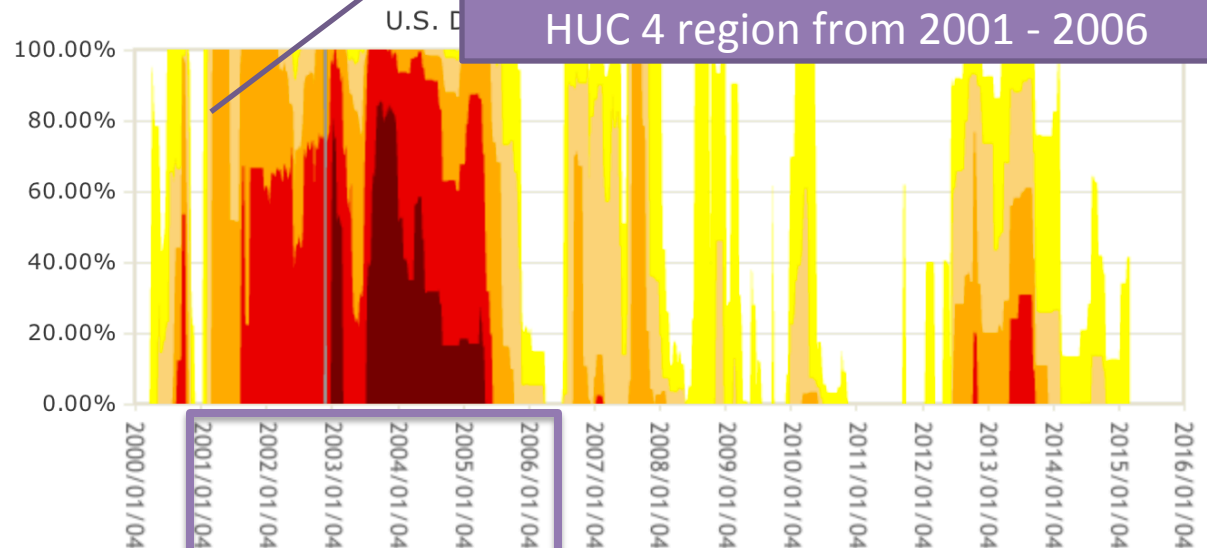
Note: The data are for the area containing the selected station.

NA SU)

Select New Station

PDSI SC-PDSI Drought Monitor Drought Periods Compare Indices Frequencies

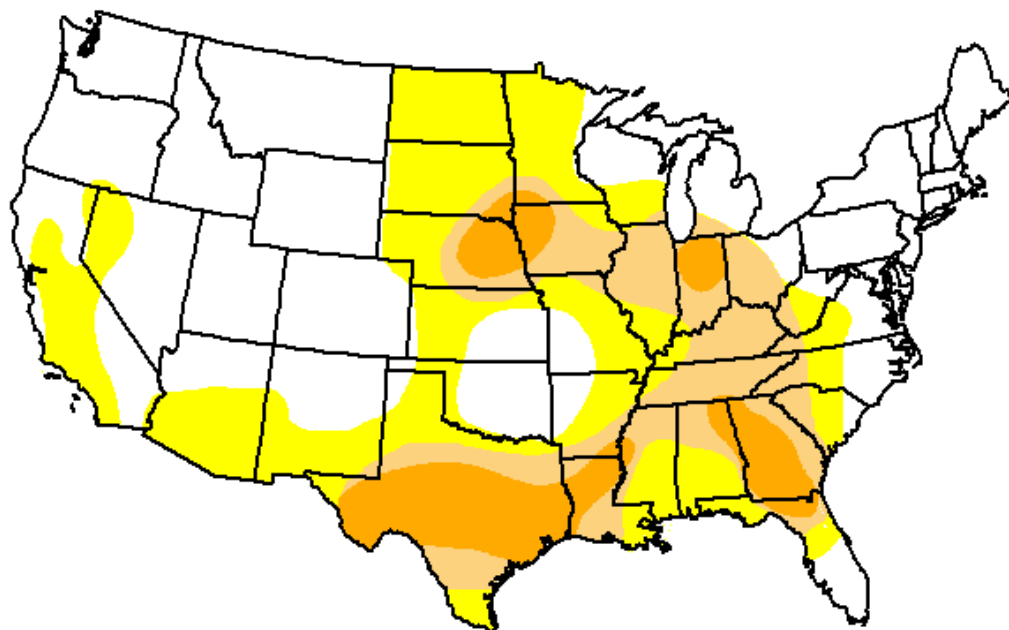
Results for **BOZEMAN MONTANA SU**



None D1 - Moderate Drought D3 - Extreme Drought
D0 - Abnormally Dry D2 - Severe Drought D4 - Exceptional Drought

U.S. Drought Monitor CONUS

The following slides show the evolution of drought conditions across the U.S. from January 2000 to present.



January 4, 2000

(Released Thursday, Jan. 6, 2000)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	49.00	51.00	23.35	9.45	0.00	0.00
Last Week	-	-	-	-	-	-
3 Months Ago	-	-	-	-	-	-
Start of Calendar Year 1/4/2000	49.00	51.00	23.35	9.45	0.00	0.00
Start of Water Year	-	-	-	-	-	-
One Year Ago	-	-	-	-	-	-

Intensity:



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author(s):

Staff

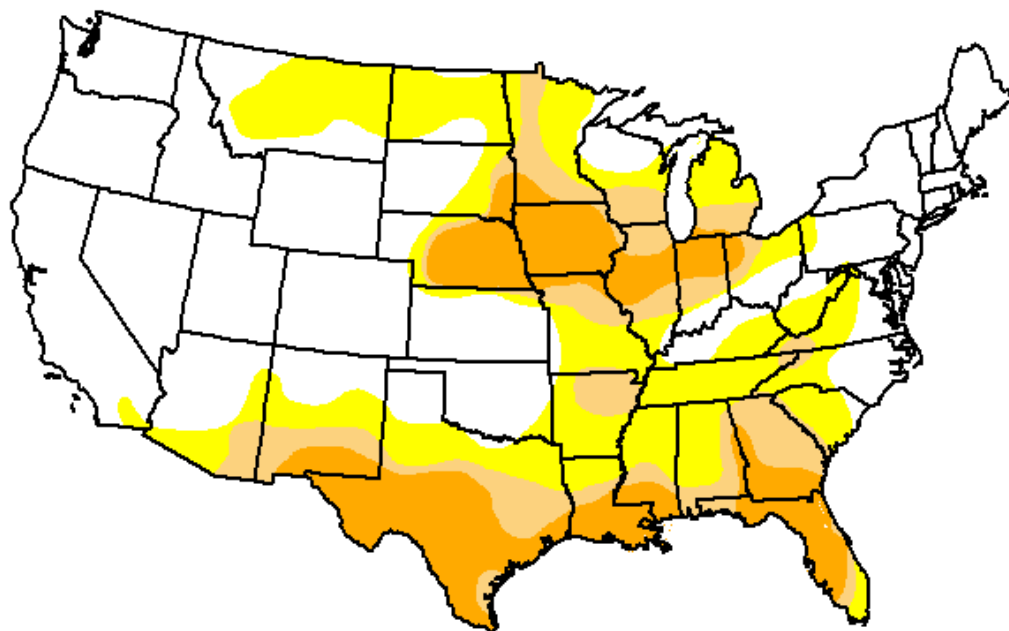
National Drought Mitigation Center



<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor CONUS

Between January and April 2000, abnormally dry conditions began to affect much of Montana



April 4, 2000

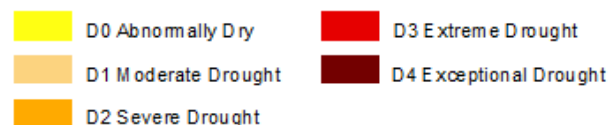
(Released Thursday, Apr. 6, 2000)

Valid 7 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	51.49	48.51	25.61	14.46	0.00	0.00
Last Week <i>3/28/2000</i>	54.69	45.31	26.54	12.48	0.00	0.00
3 Months Ago <i>1/4/2000</i>	49.00	51.00	23.35	9.45	0.00	0.00
Start of Calendar Year <i>1/4/2000</i>	49.00	51.00	23.35	9.45	0.00	0.00
Start of Water Year	-	-	-	-	-	-
One Year Ago	-	-	-	-	-	-

Intensity:



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Author(s):

Staff

National Drought Mitigation Center

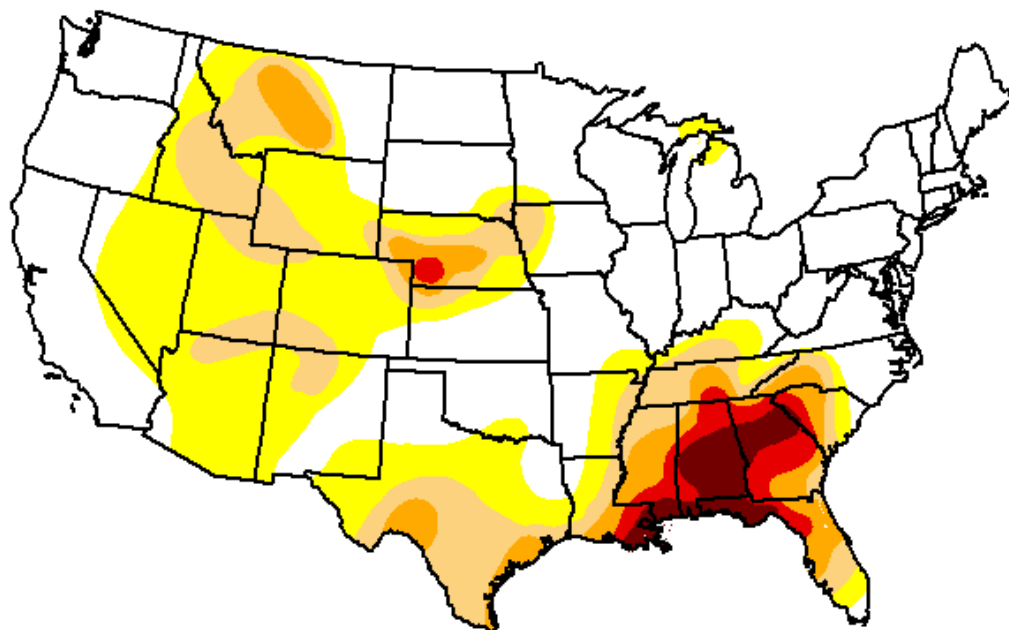


<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor

CONUS

August 1, 2000
(Released Thursday, Aug. 3, 2000)
 Valid 7 a.m. EST



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	50.33	49.67	24.12	10.36	4.91	2.41
Last Week <i>7/25/2000</i>	50.13	49.87	22.86	9.32	5.19	2.59
3 Months Ago <i>5/2/2000</i>	55.43	44.57	25.69	13.22	1.66	0.00
Start of Calendar Year <i>1/4/2000</i>	49.00	51.00	23.35	9.45	0.00	0.00
Start of Water Year	-	-	-	-	-	-
One Year Ago	-	-	-	-	-	-

Intensity:

D0 Abnormally Dry	D3 Extreme Drought
D1 Moderate Drought	D4 Exceptional Drought
D2 Severe Drought	

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author(s):

Staff

National Drought Mitigation Center



<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor CONUS

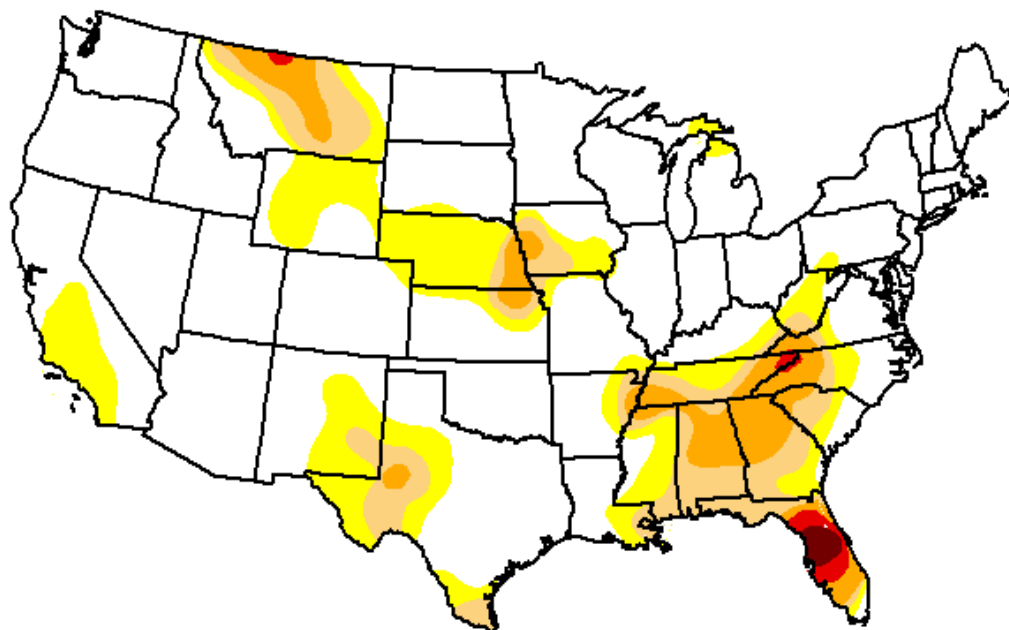
January 2, 2001

(Released Thursday, Jan. 4, 2001)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	70.82	29.18	13.94	6.16	0.96	0.33
Last Week <i>12/26/2000</i>	72.25	27.75	14.42	7.52	0.96	0.36
3 Months Ago <i>10/3/2000</i>	39.53	60.47	40.99	26.17	6.99	0.74
Start of Calendar Year <i>1/2/2001</i>	70.82	29.18	13.94	6.16	0.96	0.33
Start of Water Year <i>9/26/2000</i>	42.19	57.81	38.28	23.95	6.90	0.74
One Year Ago <i>1/4/2000</i>	49.00	51.00	23.35	9.45	0.00	0.00



Intensity:



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author(s):

Mark Svoboda

National Drought Mitigation Center



<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor

CONUS

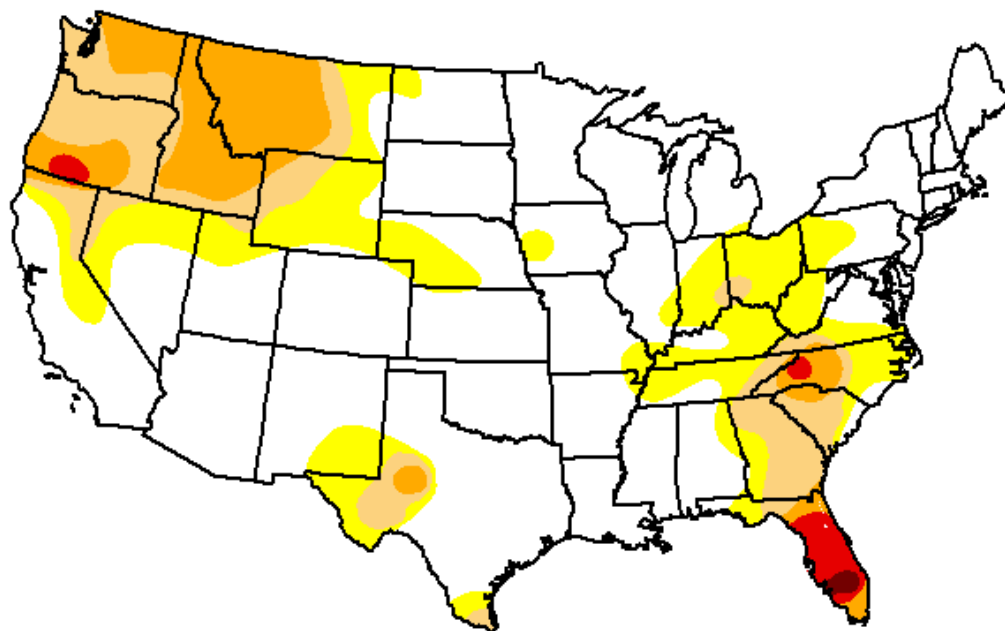
April 3, 2001

(Released Thursday, Apr. 5, 2001)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	61.84	38.16	20.58	10.13	1.43	0.18
Last Week <i>3/27/2001</i>	62.42	37.58	21.17	9.91	1.47	0.64
3 Months Ago <i>1/2/2001</i>	70.82	29.18	13.94	6.16	0.96	0.33
Start of Calendar Year <i>1/2/2001</i>	70.82	29.18	13.94	6.16	0.96	0.33
Start of Water Year <i>9/26/2000</i>	42.19	57.81	38.28	23.95	6.90	0.74
One Year Ago <i>4/4/2000</i>	51.49	48.51	25.61	14.46	0.00	0.00



Intensity:

 D0 Abnormally Dry	 D3 Extreme Drought
 D1 Moderate Drought	 D4 Exceptional Drought
 D2 Severe Drought	

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author(s):

David Miskus

NOAA/NWS/NCEP/CPC

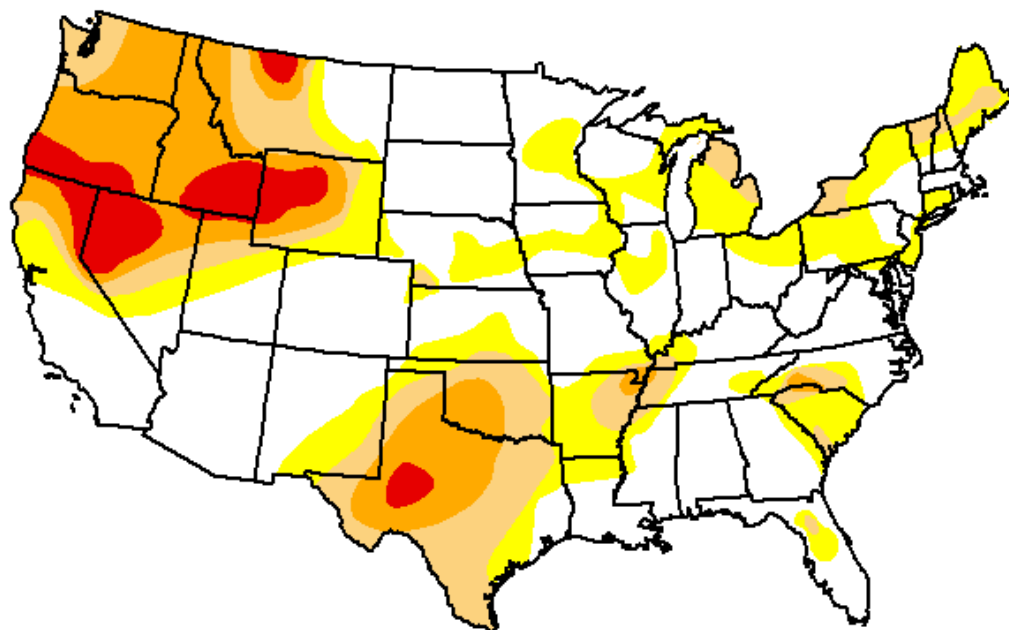


<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor

CONUS

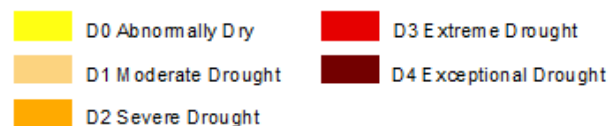
August 7, 2001
(Released Thursday, Aug. 9, 2001)
 Valid 7 a.m. EST



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	48.63	51.37	31.03	18.45	5.23	0.00
Last Week <i>7/31/2001</i>	47.31	52.69	30.97	17.76	5.23	0.00
3 Months Ago <i>5/8/2001</i>	52.51	47.49	28.52	13.18	1.98	0.27
Start of Calendar Year <i>1/2/2001</i>	70.82	29.18	13.94	6.16	0.96	0.33
Start of Water Year <i>9/26/2000</i>	42.19	57.81	38.28	23.95	6.90	0.74
One Year Ago <i>8/8/2000</i>	48.87	51.13	24.50	10.76	4.47	2.14

Intensity:



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author(s):

Douglas Le Comte
 CPC/NOAA



<http://droughtmonitor.unl.edu/>

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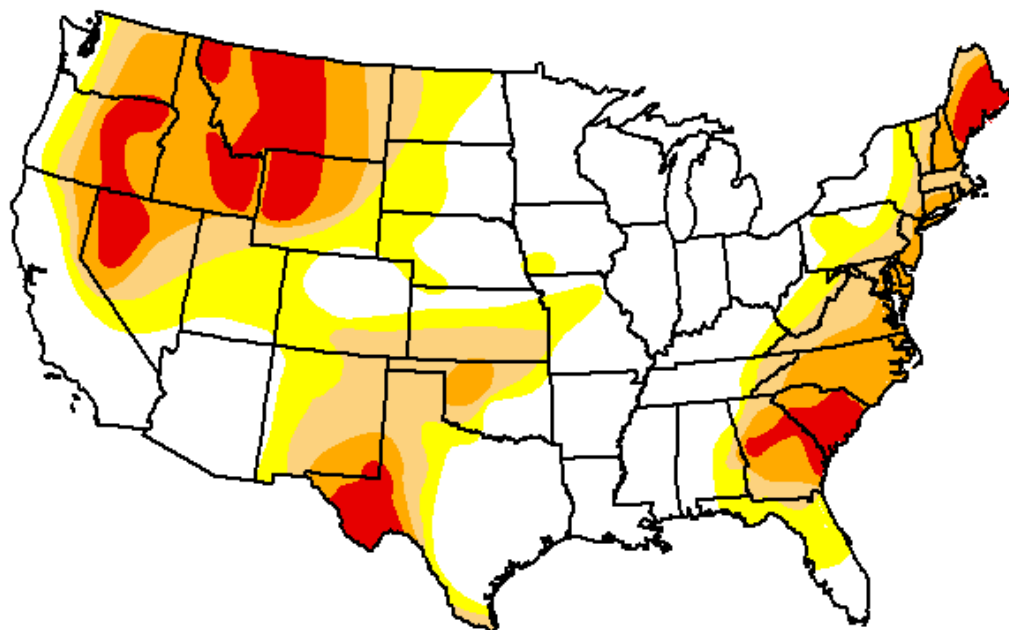
January 1, 2002

(Released Thursday, Jan. 3, 2002)

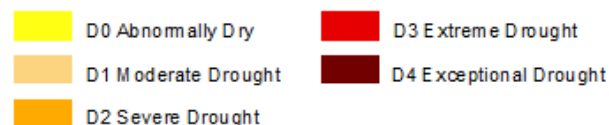
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	46.54	53.46	36.64	22.71	8.75	0.00
Last Week <i>12/25/2001</i>	46.66	53.34	36.36	22.60	8.12	0.00
3 Months Ago <i>10/2/2001</i>	55.88	44.12	28.23	18.94	9.64	0.00
Start of Calendar Year <i>1/1/2002</i>	46.54	53.46	36.64	22.71	8.75	0.00
Start of Water Year <i>9/25/2001</i>	56.31	43.69	28.40	19.78	9.38	0.00
One Year Ago <i>1/2/2001</i>	70.82	29.18	13.94	6.16	0.96	0.33



Intensity:



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author(s):

*Richard Heim
NCDC/NOAA*



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U.S. Drought Monitor

CONUS

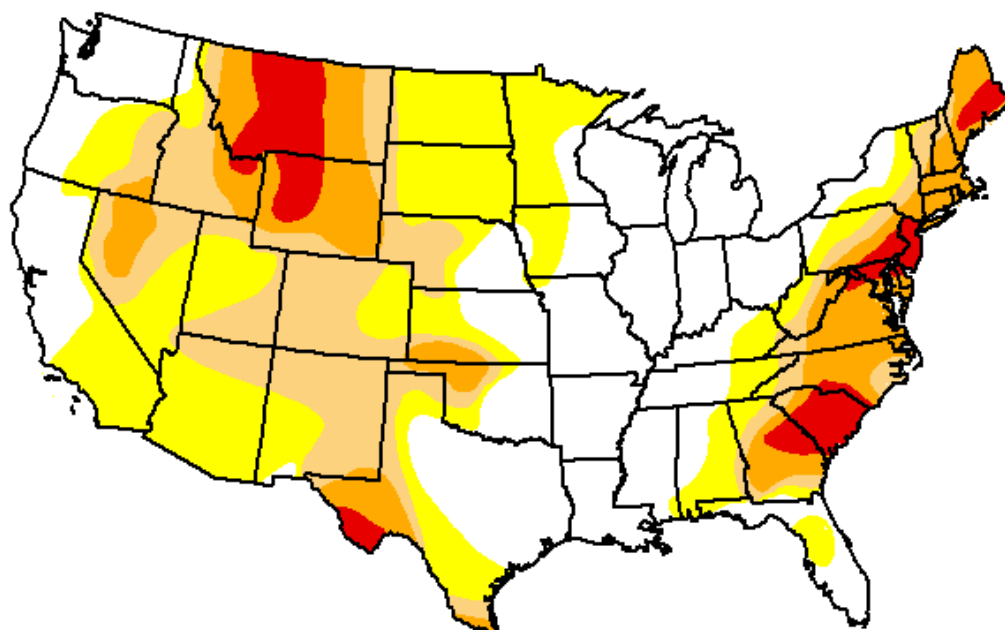
March 5, 2002

(Released Thursday, Mar. 7, 2002)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	36.40	63.60	36.54	18.16	5.66	0.00
Last Week <i>2/26/2002</i>	36.12	63.88	36.22	18.11	5.76	0.00
3 Months Ago <i>12/4/2001</i>	44.08	55.92	38.67	23.68	9.42	0.00
Start of Calendar Year <i>1/1/2002</i>	46.54	53.46	36.64	22.71	8.75	0.00
Start of Water Year <i>9/25/2001</i>	56.31	43.69	28.40	19.78	9.38	0.00
One Year Ago <i>3/6/2001</i>	66.74	33.26	21.24	5.46	1.66	0.71



Intensity:



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Author(s):

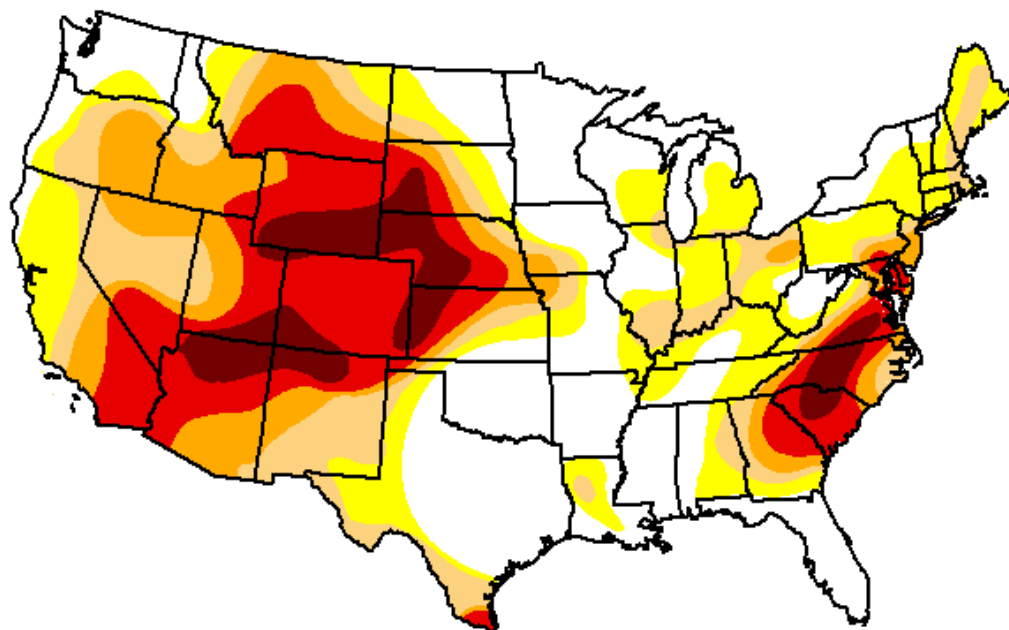
*Douglas Le Comte
CPC/NOAA*



<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor CONUS

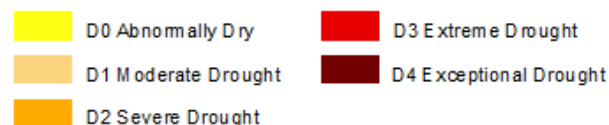
August 6, 2002
(Released Thursday, Aug. 8, 2002)
Valid 7 a.m. EST



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	31.51	68.49	50.09	35.78	23.22	6.98
Last Week <i>7/30/2002</i>	28.68	71.32	50.45	34.65	22.50	6.11
3 Months Ago <i>5/7/2002</i>	36.39	63.61	43.96	31.68	11.40	0.61
Start of Calendar Year <i>1/1/2002</i>	46.54	53.46	36.64	22.71	8.75	0.00
Start of Water Year <i>9/25/2001</i>	56.31	43.69	28.40	19.78	9.38	0.00
One Year Ago <i>8/7/2001</i>	48.63	51.37	31.03	18.45	5.23	0.00

Intensity:



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Author(s):

Staff

National Drought Mitigation Center



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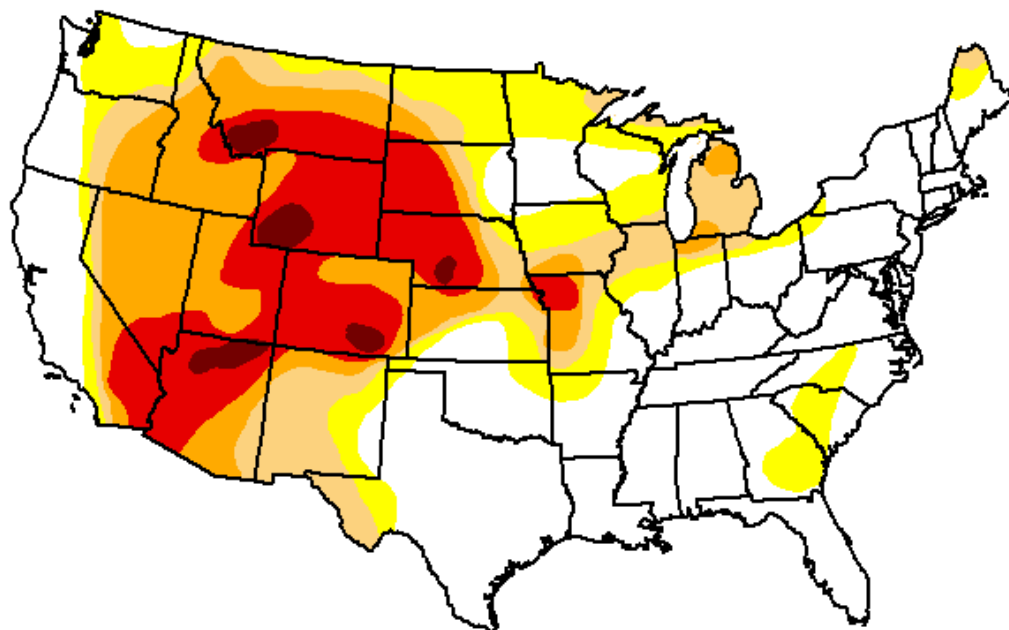
January 7, 2003

(Released Thursday, Jan. 9, 2003)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	42.39	57.61	42.56	31.21	16.30	1.69
Last Week <i>12/31/2002</i>	44.96	55.04	41.24	30.33	14.25	1.28
3 Months Ago <i>10/6/2002</i>	28.77	71.23	50.20	32.37	16.87	2.09
Start of Calendar Year <i>12/31/2002</i>	44.96	55.04	41.24	30.33	14.25	1.28
Start of Water Year <i>10/1/2002</i>	29.08	70.92	48.59	33.38	17.84	3.14
One Year Ago <i>1/8/2002</i>	45.55	54.45	34.71	20.27	6.31	0.00



Intensity:

 D0 Abnormally Dry	 D3 Extreme Drought
 D1 Moderate Drought	 D4 Exceptional Drought
 D2 Severe Drought	

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author(s):

Richard Tinker

CPC/NOAA/NWS/NCEP



<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor CONUS

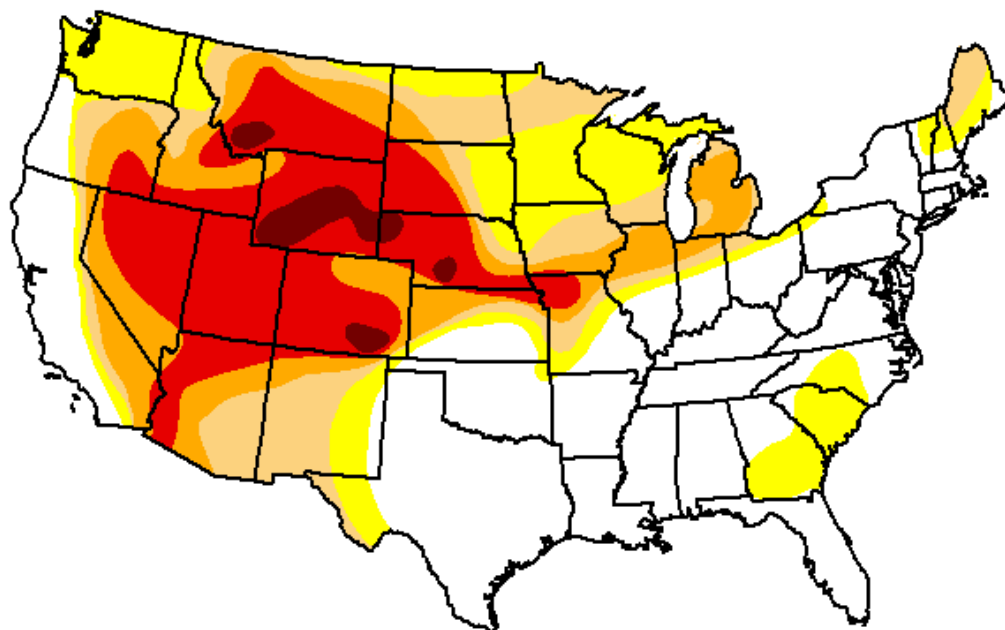
March 4, 2003

(Released Thursday, Mar. 6, 2003)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	38.82	61.18	44.75	32.53	19.90	2.00
Last Week <i>2/25/2003</i>	39.15	60.85	43.43	32.48	19.92	2.08
3 Months Ago <i>12/3/2002</i>	41.05	58.95	42.04	26.59	13.25	1.09
Start of Calendar Year <i>12/31/2002</i>	44.96	55.04	41.24	30.33	14.25	1.28
Start of Water Year <i>10/1/2002</i>	29.08	70.92	48.59	33.38	17.84	3.14
One Year Ago <i>3/5/2002</i>	36.40	63.60	36.54	18.16	5.66	0.00



Intensity:



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author(s):

Richard Tinker

CPC/NOAA/NWS/NCEP

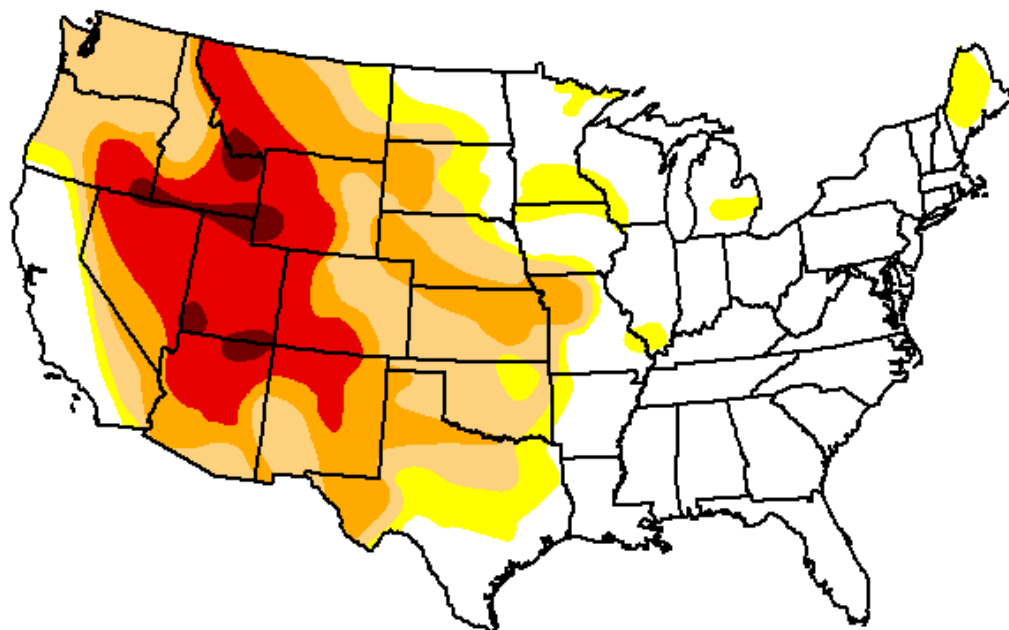


<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor

CONUS





August 5, 2003
 (Released Thursday, Aug. 7, 2003)
 Valid 7 a.m. EST



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	42.78	57.22	48.05	30.07	14.93	1.98
Last Week <i>7/29/2003</i>	44.96	55.04	47.09	28.89	15.11	2.15
3 Months Ago <i>5/6/2003</i>	38.67	61.33	42.80	23.45	10.87	0.26
Start of Calendar Year <i>12/31/2002</i>	44.96	55.04	41.24	30.33	14.25	1.28
Start of Water Year <i>10/1/2002</i>	29.08	70.92	48.59	33.38	17.84	3.14
One Year Ago <i>8/6/2002</i>	31.51	68.49	50.09	35.78	23.22	6.98

Intensity:

 D0 Abnormally Dry	 D3 Extreme Drought
 D1 Moderate Drought	 D4 Exceptional Drought
 D2 Severe Drought	

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author(s):

Douglas Le Comte
 CPC/NOAA



<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor CONUS

January 6, 2004

(Released Thursday, Jan. 8, 2004)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	42.23	57.77	45.97	32.54	16.24	3.71
Last Week <i>12/30/2003</i>	43.82	56.18	45.80	33.78	15.99	3.40
3 Months Ago <i>10/7/2003</i>	41.01	58.99	48.34	33.60	16.75	2.07
Start of Calendar Year <i>12/30/2003</i>	43.82	56.18	45.80	33.78	15.99	3.40
Start of Water Year <i>9/30/2003</i>	38.58	61.42	48.37	33.11	16.87	2.09
One Year Ago <i>1/7/2003</i>	42.39	57.61	42.56	31.21	16.30	1.69

Intensity:

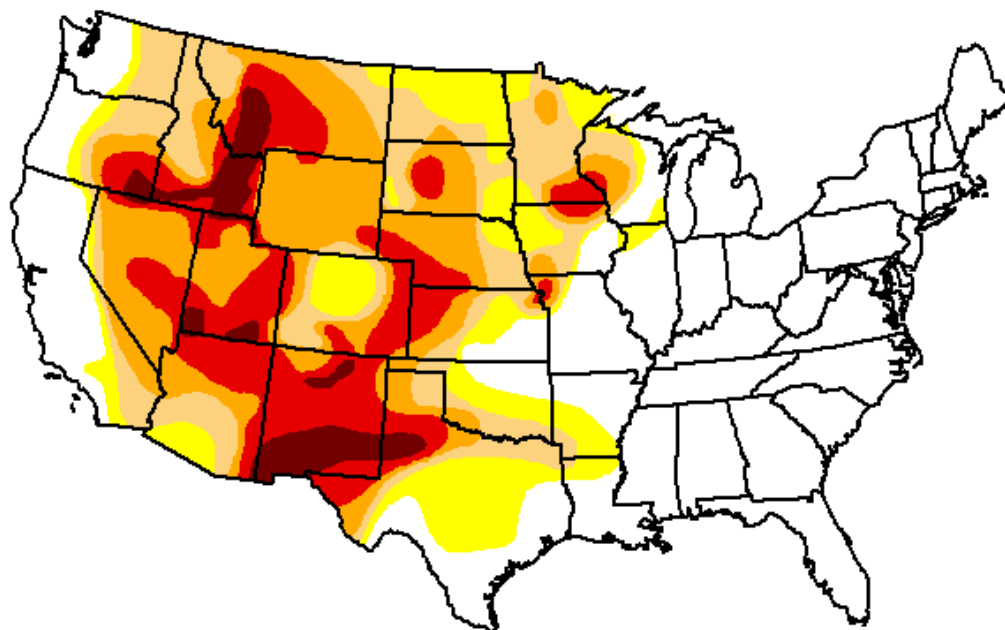
 D0 Abnormally Dry	 D3 Extreme Drought
 D1 Moderate Drought	 D4 Exceptional Drought
 D2 Severe Drought	

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Author(s):

Richard Tinker

CPC/NOAA/NWS/NCEP



<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor CONUS

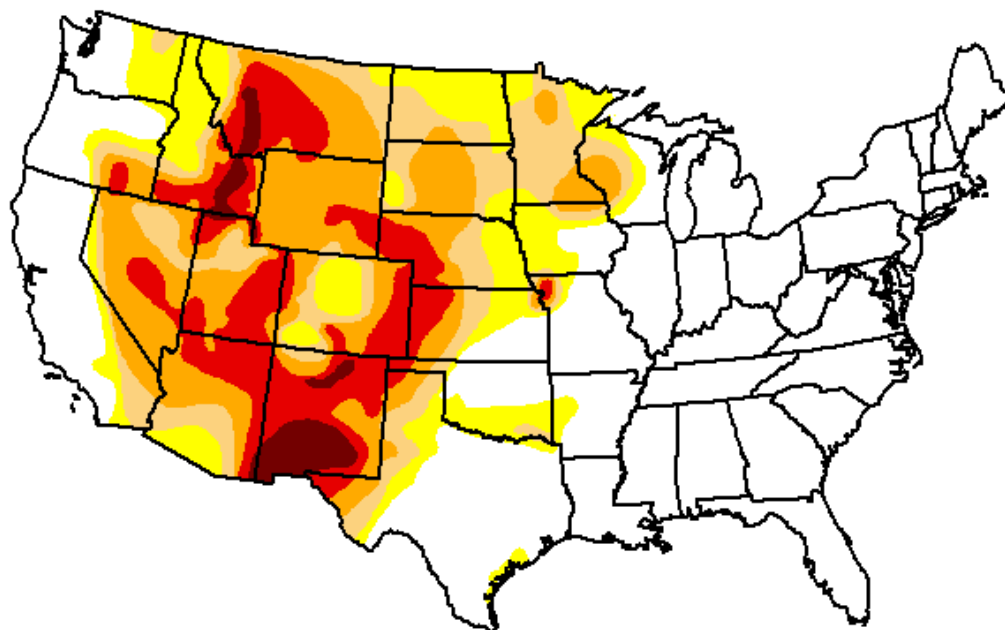
March 2, 2004

(Released Thursday, Mar. 4, 2004)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	48.60	51.40	39.18	28.26	12.54	2.08
Last Week <i>2/24/2004</i>	47.72	52.28	40.97	30.75	14.71	2.83
3 Months Ago <i>12/2/2003</i>	42.04	57.96	47.75	33.57	17.27	3.35
Start of Calendar Year <i>12/30/2003</i>	43.82	56.18	45.80	33.78	15.99	3.40
Start of Water Year <i>9/30/2003</i>	38.58	61.42	48.37	33.11	16.87	2.09
One Year Ago <i>3/4/2003</i>	38.82	61.18	44.75	32.53	19.90	2.00



Intensity:

 D0 Abnormally Dry	 D3 Extreme Drought
 D1 Moderate Drought	 D4 Exceptional Drought
 D2 Severe Drought	

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author(s):

Richard Tinker

CPC/NOAA/NWS/NCEP



<http://droughtmonitor.unl.edu/>






U.S. Drought Monitor CONUS

August 3, 2004
(Released Thursday, Aug. 5, 2004)
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	53.81	46.19	33.03	24.04	10.94	1.38
Last Week <i>7/27/2004</i>	55.17	44.83	32.65	23.69	10.73	1.38
3 Months Ago <i>5/4/2004</i>	45.83	54.17	39.69	26.71	12.02	1.08
Start of Calendar Year <i>12/30/2003</i>	43.82	56.18	45.80	33.78	15.99	3.40
Start of Water Year <i>9/30/2003</i>	38.58	61.42	48.37	33.11	16.87	2.09
One Year Ago <i>8/5/2003</i>	42.78	57.22	48.05	30.07	14.93	1.98

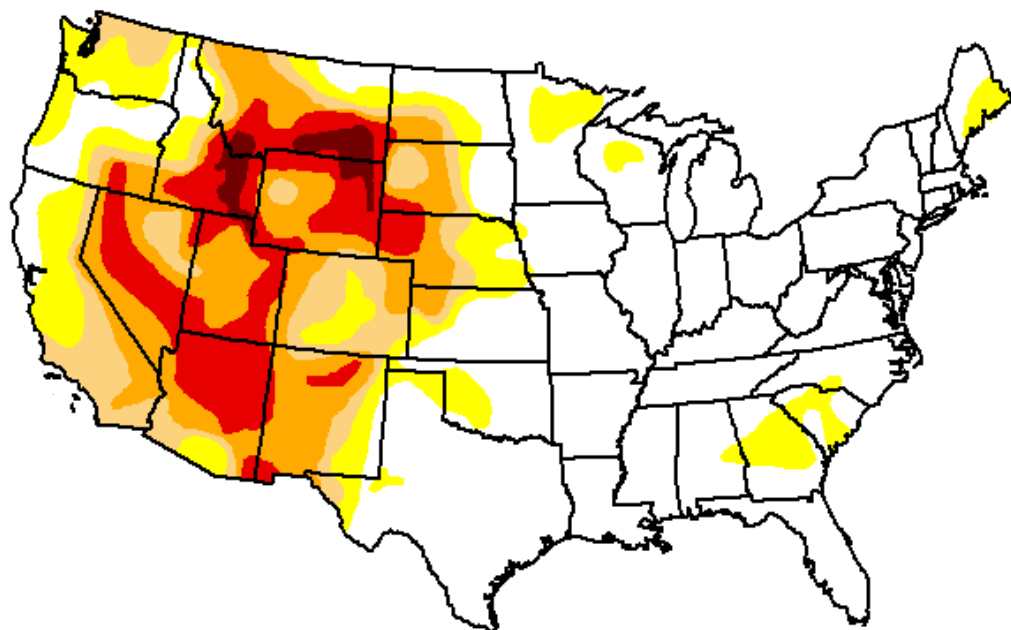
Intensity:

 D0 Abnormally Dry	 D3 Extreme Drought
 D1 Moderate Drought	 D4 Exceptional Drought
 D2 Severe Drought	

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author(s):

Mark Svoboda
National Drought Mitigation Center



<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor

CONUS

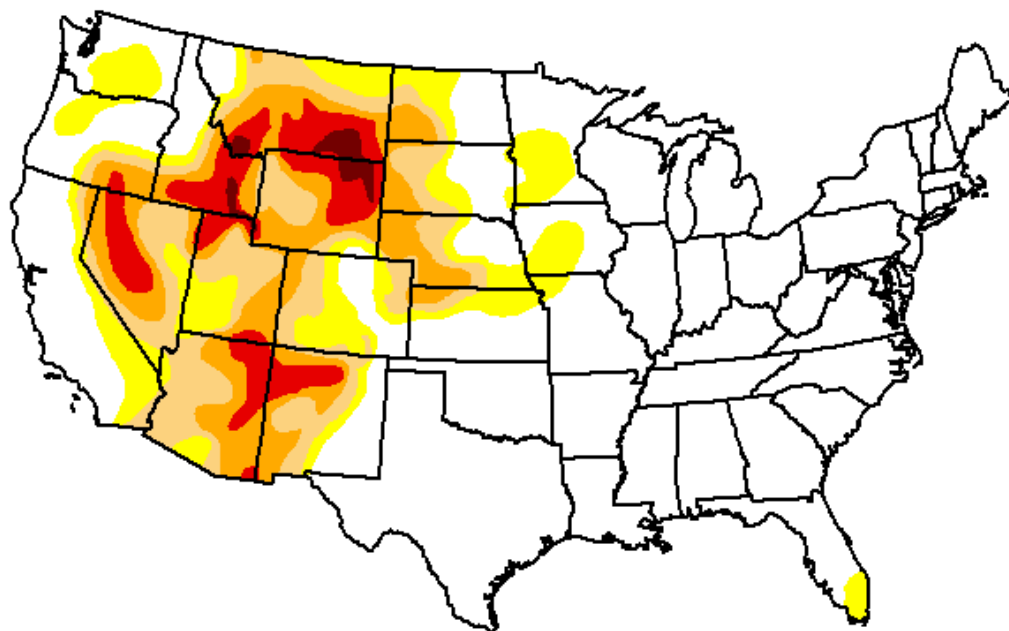
January 4, 2005

(Released Thursday, Jan. 6, 2005)



Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	63.03	36.97	25.64	15.39	5.91	0.77
Last Week <i>12/28/2004</i>	61.24	38.76	27.10	16.51	6.53	0.92
3 Months Ago <i>10/5/2004</i>	51.58	48.42	32.25	21.58	9.41	0.93
Start of Calendar Year <i>1/4/2005</i>	63.03	36.97	25.64	15.39	5.91	0.77
Start of Water Year <i>9/28/2004</i>	56.52	43.48	30.51	21.82	9.69	0.93
One Year Ago <i>1/6/2004</i>	42.23	57.77	45.97	32.54	16.24	3.71



Intensity:

 D0 Abnormally Dry	 D3 Extreme Drought
 D1 Moderate Drought	 D4 Exceptional Drought
 D2 Severe Drought	

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author(s):

Mark Svoboda

National Drought Mitigation Center



<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor CONUS

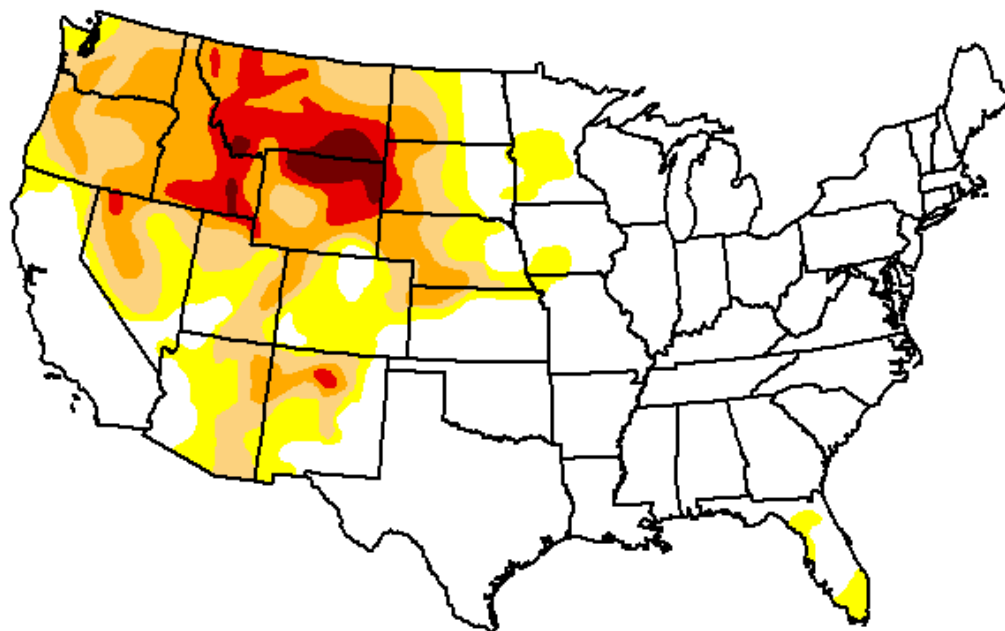
March 1, 2005

(Released Thursday, Mar. 3, 2005)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	61.65	38.35	26.70	16.26	5.51	1.32
Last Week <i>2/22/2005</i>	60.35	39.65	27.17	15.40	5.84	1.04
3 Months Ago <i>11/30/2004</i>	62.82	37.18	26.99	16.72	6.49	0.93
Start of Calendar Year <i>1/4/2005</i>	63.03	36.97	25.64	15.39	5.91	0.77
Start of Water Year <i>9/28/2004</i>	56.52	43.48	30.51	21.82	9.69	0.93
One Year Ago <i>3/2/2004</i>	48.60	51.40	39.18	28.26	12.54	2.08



Intensity:

 D0 Abnormally Dry	 D3 Extreme Drought
 D1 Moderate Drought	 D4 Exceptional Drought
 D2 Severe Drought	

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author(s):

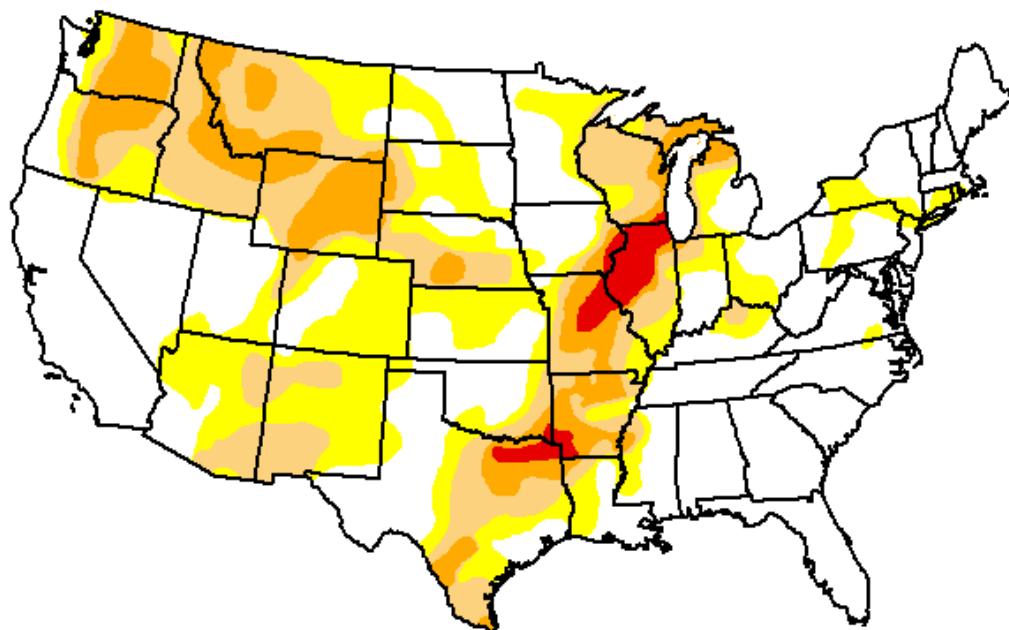
*Richard Heim
NCDC/NOAA*



<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor CONUS

Conditions were improving by August 2, 2005



August 2, 2005




(Released Thursday, Aug. 4, 2005)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	47.68	52.32	29.29	12.30	1.84	0.00
Last Week <i>7/26/2005</i>	48.49	51.51	28.82	12.04	1.94	0.00
3 Months Ago <i>5/3/2005</i>	55.76	44.24	21.78	13.18	4.64	0.67
Start of Calendar Year <i>1/4/2005</i>	63.03	36.97	25.64	15.39	5.91	0.77
Start of Water Year <i>9/28/2004</i>	56.52	43.48	30.51	21.82	9.69	0.93
One Year Ago <i>8/3/2004</i>	53.81	46.19	33.03	24.04	10.94	1.38

Intensity:

 D0 Abnormally Dry	 D3 Extreme Drought
 D1 Moderate Drought	 D4 Exceptional Drought
 D2 Severe Drought	

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author(s):

Michael Hayes

National Drought Mitigation Center



<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor CONUS

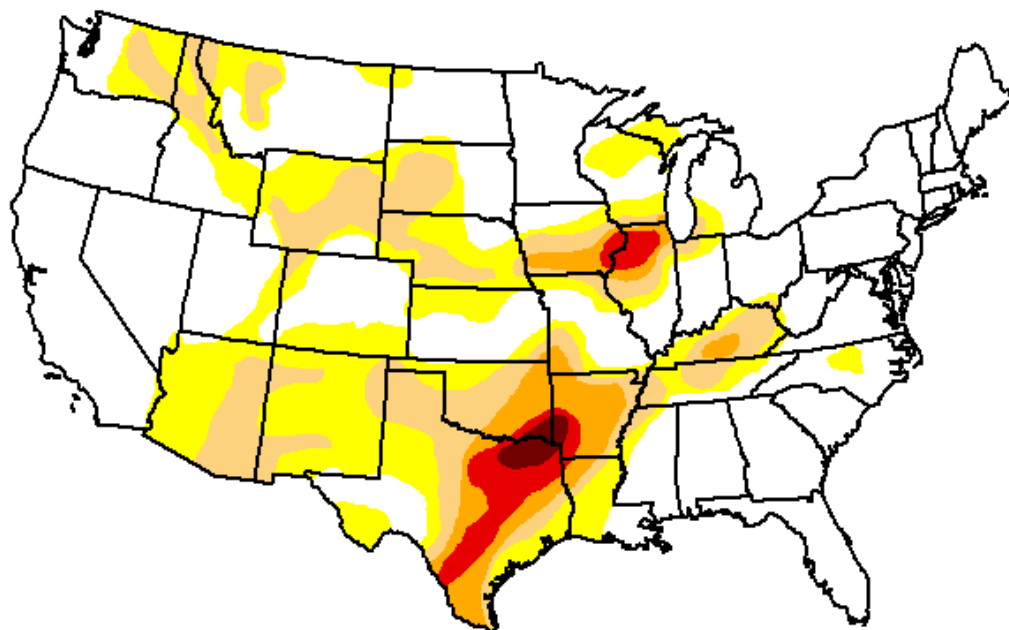
January 3, 2006

(Released Thursday, Jan. 5, 2006)



Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	57.05	42.95	21.29	7.49	2.95	0.61
Last Week <i>12/27/2005</i>	55.66	44.34	22.60	7.35	2.80	0.54
3 Months Ago <i>10/4/2005</i>	52.08	47.92	25.04	6.83	0.82	0.00
Start of Calendar Year <i>1/3/2006</i>	57.05	42.95	21.29	7.49	2.95	0.61
Start of Water Year <i>9/27/2005</i>	54.16	45.84	23.72	7.19	0.75	0.00
One Year Ago <i>1/4/2005</i>	63.03	36.97	25.64	15.39	5.91	0.77



Intensity:

 D0 Abnormally Dry	 D3 Extreme Drought
 D1 Moderate Drought	 D4 Exceptional Drought
 D2 Severe Drought	

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author(s):

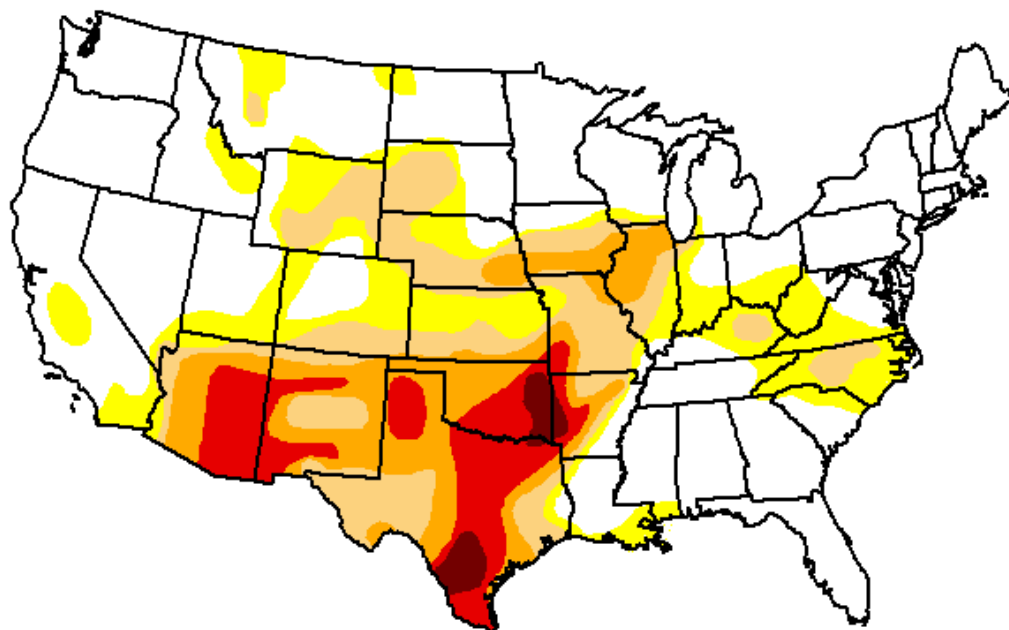
*Douglas Le Comte
CPC/NOAA*



<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor CONUS

By March 2007, most of the state was out of drought.



March 7, 2006

(Released Thursday, Mar. 9, 2006)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	52.30	47.70	31.55	18.03	8.31	1.22
Last Week <i>2/28/2006</i>	54.32	45.68	30.11	16.42	7.15	1.22
3 Months Ago <i>12/6/2005</i>	54.74	45.26	22.09	6.06	1.39	0.00
Start of Calendar Year <i>1/3/2006</i>	57.05	42.95	21.29	7.49	2.95	0.61
Start of Water Year <i>9/27/2005</i>	54.16	45.84	23.72	7.19	0.75	0.00
One Year Ago <i>3/8/2005</i>	59.94	40.06	26.76	16.79	5.56	1.33

Intensity:



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author(s):

Brian Fuchs

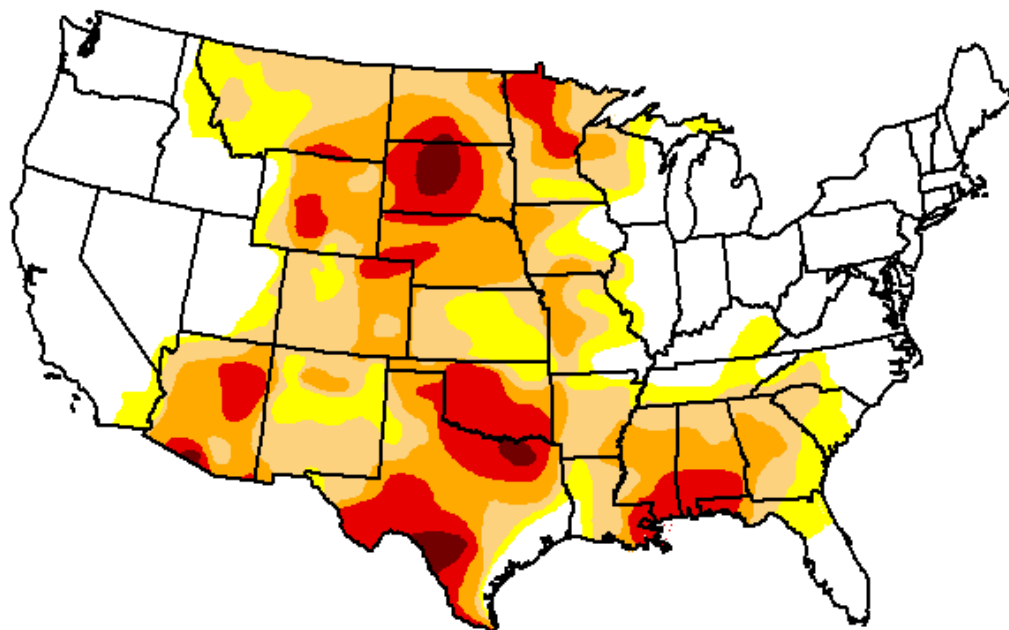
National Drought Mitigation Center



<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor CONUS

The following slides show the evolution of drought conditions across the U.S. from January 2000 to present.



August 1, 2006

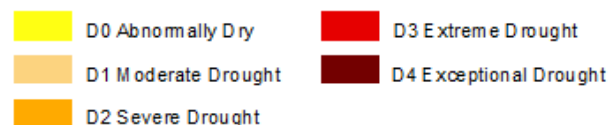
(Released Thursday, Aug. 3, 2006)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	38.55	61.45	48.43	28.68	11.34	1.25
Last Week <i>7/25/2006</i>	38.50	61.50	49.95	29.12	11.33	1.25
3 Months Ago <i>5/2/2006</i>	49.16	50.84	30.02	15.47	5.56	1.82
Start of Calendar Year <i>1/3/2006</i>	57.05	42.95	21.29	7.49	2.95	0.61
Start of Water Year <i>9/27/2005</i>	54.16	45.84	23.72	7.19	0.75	0.00
One Year Ago <i>8/2/2005</i>	47.68	52.32	29.29	12.30	1.84	0.00

Intensity:



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author(s):

David Miskus

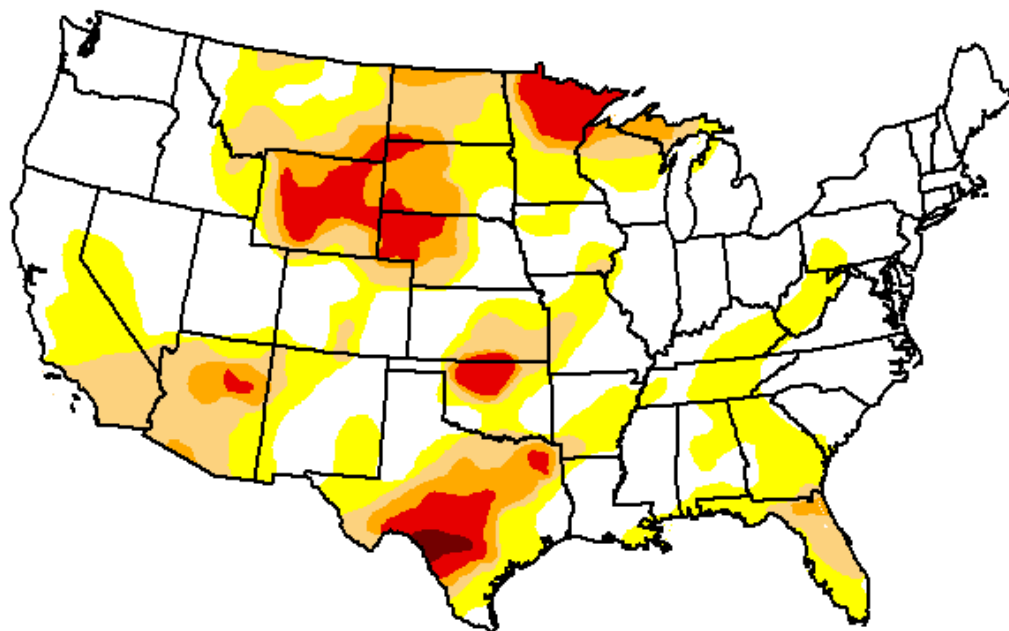
NOAA/NWS/NCEP/CPC



<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor CONUS

This respite was short-lived as conditions began to deteriorate by January, 2007.



January 2, 2007

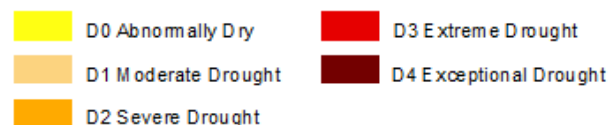
(Released Thursday, Jan. 4, 2007)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	50.01	49.99	25.63	12.62	5.93	0.33
Last Week 12/26/2006	47.52	52.48	25.53	13.03	5.86	0.48
3 Months Ago 10/3/2006	44.59	55.41	34.48	16.52	6.81	0.14
Start of Calendar Year 1/2/2007	50.01	49.99	25.63	12.62	5.93	0.33
Start of Water Year 9/26/2006	45.13	54.87	32.93	16.30	6.61	0.14
One Year Ago 1/3/2006	57.05	42.95	21.29	7.49	2.95	0.61

Intensity:



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author(s):

Brian Fuchs

National Drought Mitigation Center



<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor CONUS

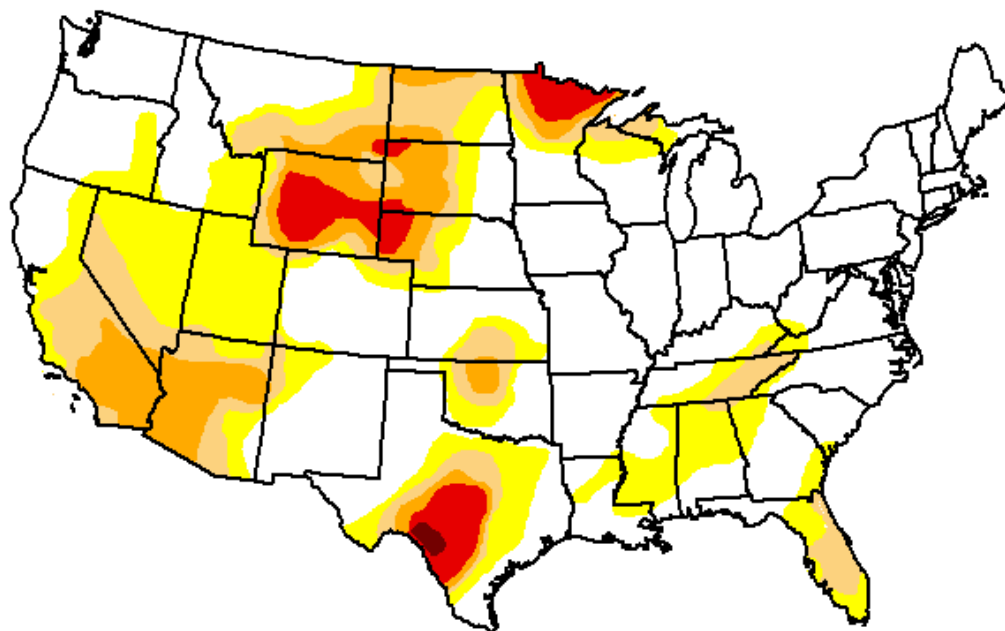
March 6, 2007

(Released Thursday, Mar. 8, 2007)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	56.02	43.98	23.52	12.11	3.87	0.18
Last Week <i>2/27/2007</i>	54.70	45.30	25.20	13.36	4.62	0.18
3 Months Ago <i>12/5/2006</i>	53.72	46.28	25.13	13.13	6.14	0.17
Start of Calendar Year <i>1/2/2007</i>	50.01	49.99	25.63	12.62	5.93	0.33
Start of Water Year <i>9/26/2006</i>	45.13	54.87	32.93	16.30	6.61	0.14
One Year Ago <i>3/7/2006</i>	52.30	47.70	31.55	18.03	8.31	1.22



Intensity:

 D0 Abnormally Dry	 D3 Extreme Drought
 D1 Moderate Drought	 D4 Exceptional Drought
 D2 Severe Drought	

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author(s):

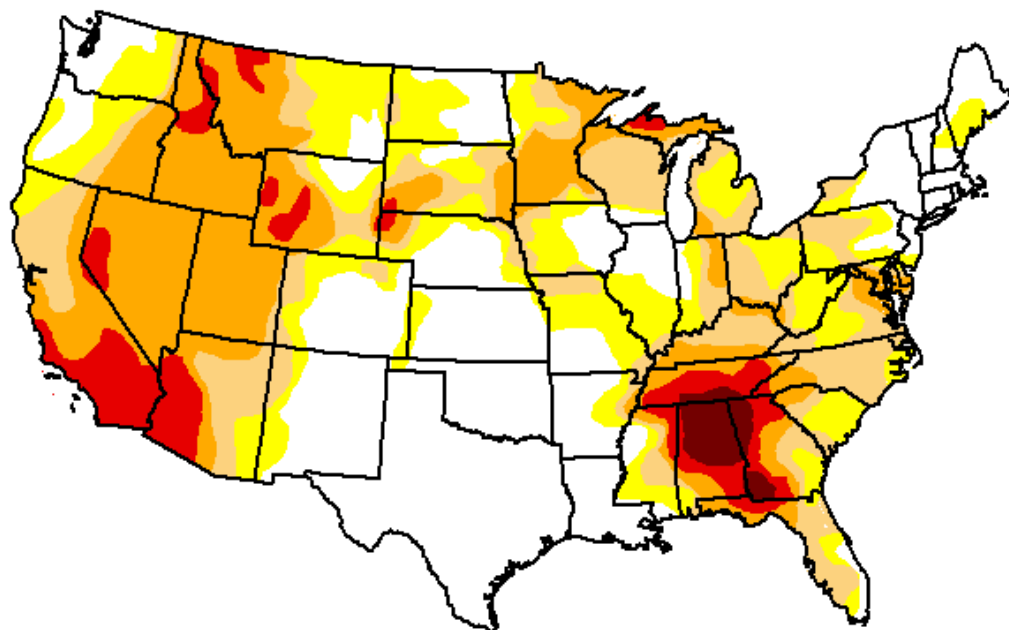
*Douglas Le Comte
CPC/NOAA*



<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor CONUS

August 7, 2007
(Released Thursday, Aug. 9, 2007)
Valid 7 a.m. EST



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	33.83	66.17	46.95	30.01	8.35	1.53
Last Week <i>7/31/2007</i>	35.95	64.05	46.11	28.74	6.78	0.66
3 Months Ago <i>5/8/2007</i>	53.45	46.55	31.61	14.57	5.12	0.00
Start of Calendar Year <i>1/2/2007</i>	50.01	49.99	25.63	12.62	5.93	0.33
Start of Water Year <i>9/26/2006</i>	45.13	54.87	32.93	16.30	6.61	0.14
One Year Ago <i>8/8/2006</i>	36.40	63.60	49.36	30.92	12.09	1.90

Intensity:



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author(s):

Brian Fuchs

National Drought Mitigation Center



<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor CONUS

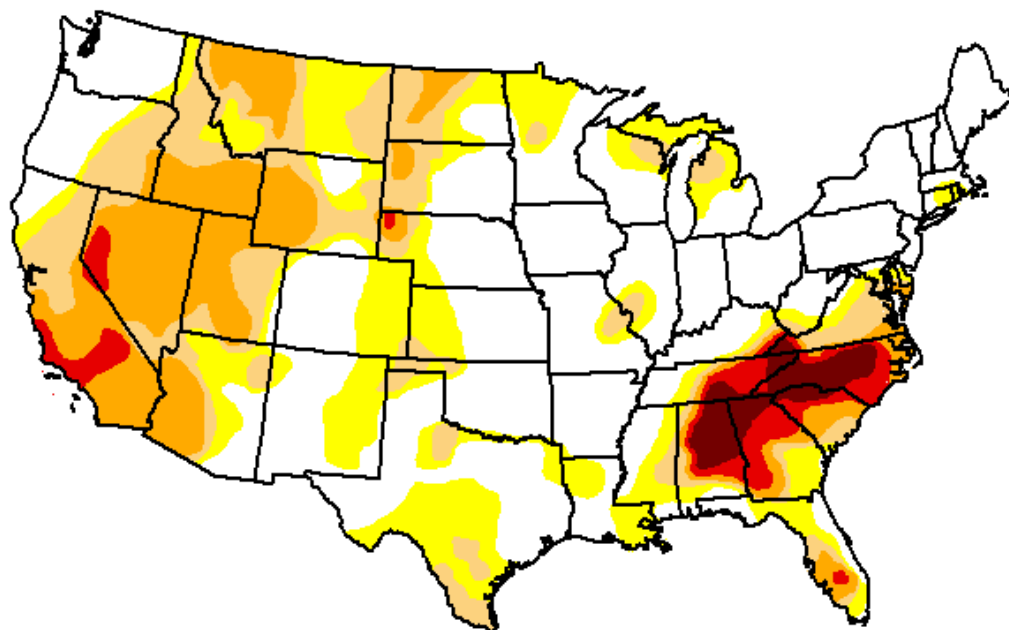
January 1, 2008

(Released Thursday, Jan. 3, 2008)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	45.42	54.58	34.96	20.39	5.75	2.38
Last Week <i>12/25/2007</i>	46.38	53.62	34.54	20.78	6.41	3.75
3 Months Ago <i>10/2/2007</i>	40.70	59.30	43.76	29.63	11.99	3.35
Start of Calendar Year <i>1/1/2008</i>	45.42	54.58	34.96	20.39	5.75	2.38
Start of Water Year <i>9/25/2007</i>	41.29	58.71	43.95	30.02	11.81	2.28
One Year Ago <i>1/2/2007</i>	50.01	49.99	25.63	12.62	5.93	0.33



Intensity:



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author(s):

*Richard Heim
NCDC/NOAA*



<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor CONUS

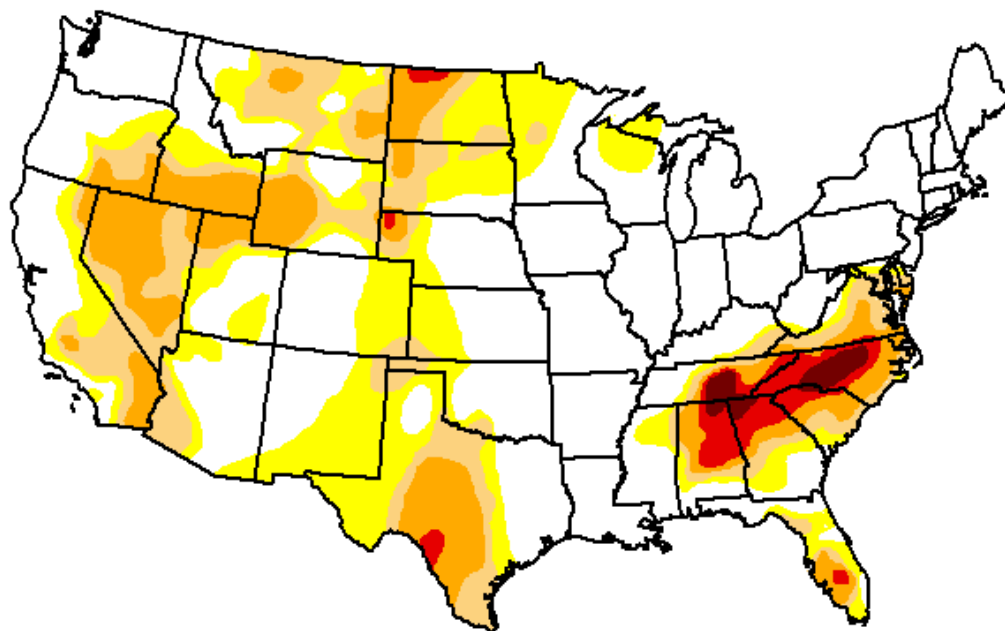
March 4, 2008

(Released Thursday, Mar. 6, 2008)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	51.91	48.09	28.46	15.26	3.28	0.89
Last Week <i>2/26/2008</i>	50.09	49.91	29.19	15.05	3.35	1.09
3 Months Ago <i>12/4/2007</i>	41.44	58.56	36.33	20.68	6.15	3.24
Start of Calendar Year <i>1/1/2008</i>	45.42	54.58	34.96	20.39	5.75	2.38
Start of Water Year <i>9/25/2007</i>	41.29	58.71	43.95	30.02	11.81	2.28
One Year Ago <i>3/6/2007</i>	56.02	43.98	23.52	12.11	3.87	0.18



Intensity:



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author(s):

Brian Fuchs

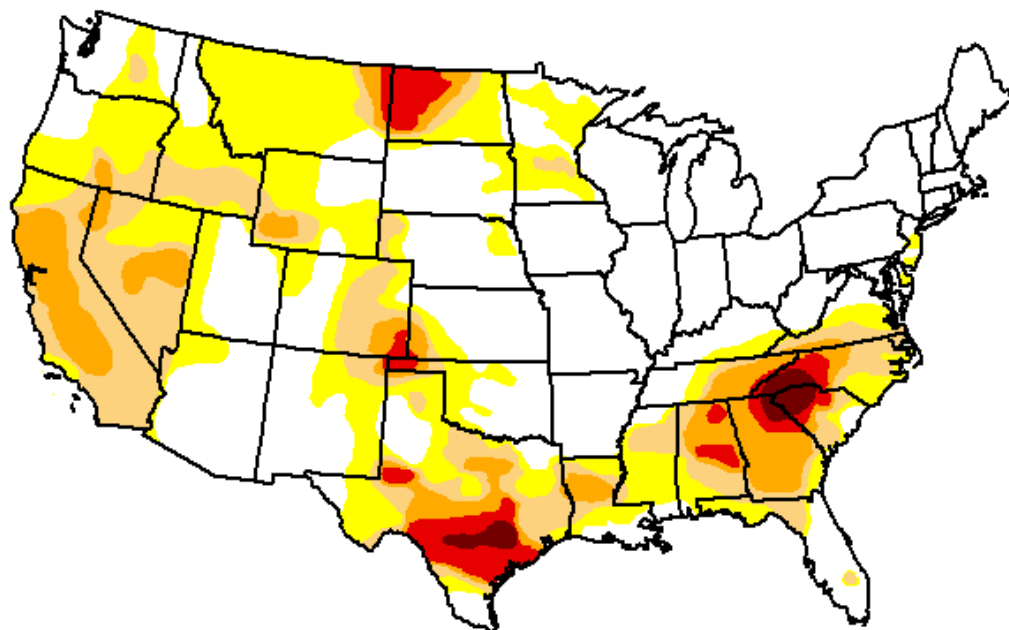
National Drought Mitigation Center



<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor CONUS

August 12, 2008
(Released Thursday, Aug. 14, 2008)
Valid 7 a.m. EST



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	48.29	51.71	27.25	12.84	4.42	0.96
Last Week 8/5/2008	46.84	53.16	28.20	12.98	4.35	0.96
3 Months Ago 5/13/2008	53.83	46.17	24.55	8.62	2.09	0.00
Start of Calendar Year 1/1/2008	45.42	54.58	34.96	20.39	5.75	2.38
Start of Water Year 9/25/2007	41.29	58.71	43.95	30.02	11.81	2.28
One Year Ago 8/14/2007	34.79	65.21	48.17	32.85	10.01	2.34

Intensity:



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author(s):

Eric Luebehusen
U.S. Department of Agriculture



<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor CONUS

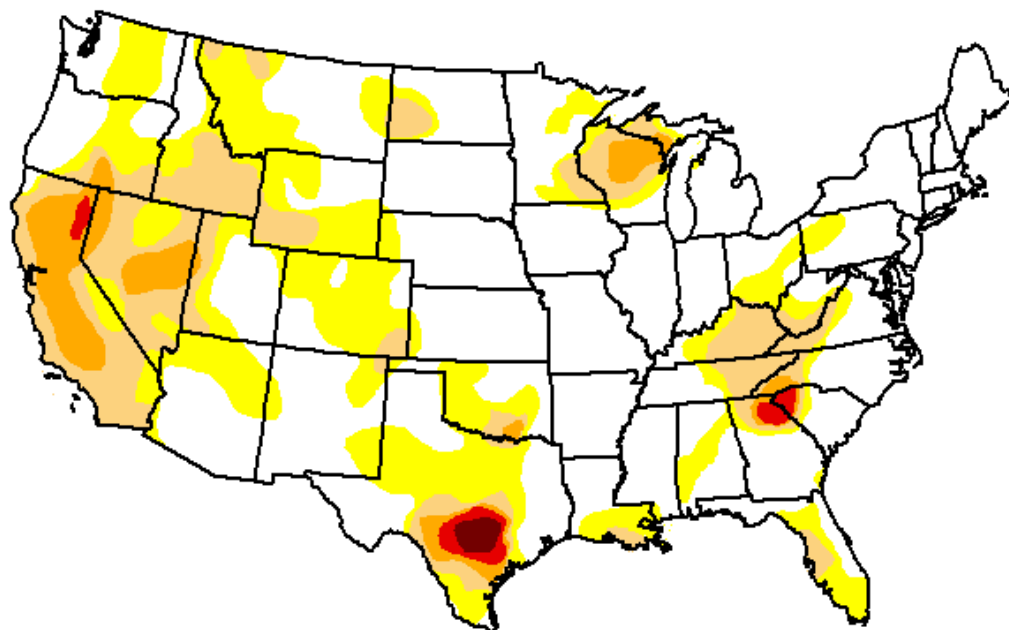
January 6, 2009

(Released Thursday, Jan. 8, 2009)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	57.72	42.28	19.20	5.93	1.21	0.37
Last Week <i>12/30/2008</i>	58.21	41.79	19.19	6.17	1.24	0.37
3 Months Ago <i>10/7/2008</i>	54.73	45.27	23.15	9.02	1.73	0.18
Start of Calendar Year <i>12/30/2008</i>	58.21	41.79	19.19	6.17	1.24	0.37
Start of Water Year <i>9/30/2008</i>	54.10	45.90	23.55	8.89	1.84	0.18
One Year Ago <i>1/8/2008</i>	43.59	56.41	35.41	18.25	4.71	2.51



Intensity:



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author(s):

Brian Fuchs

National Drought Mitigation Center



<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor

CONUS

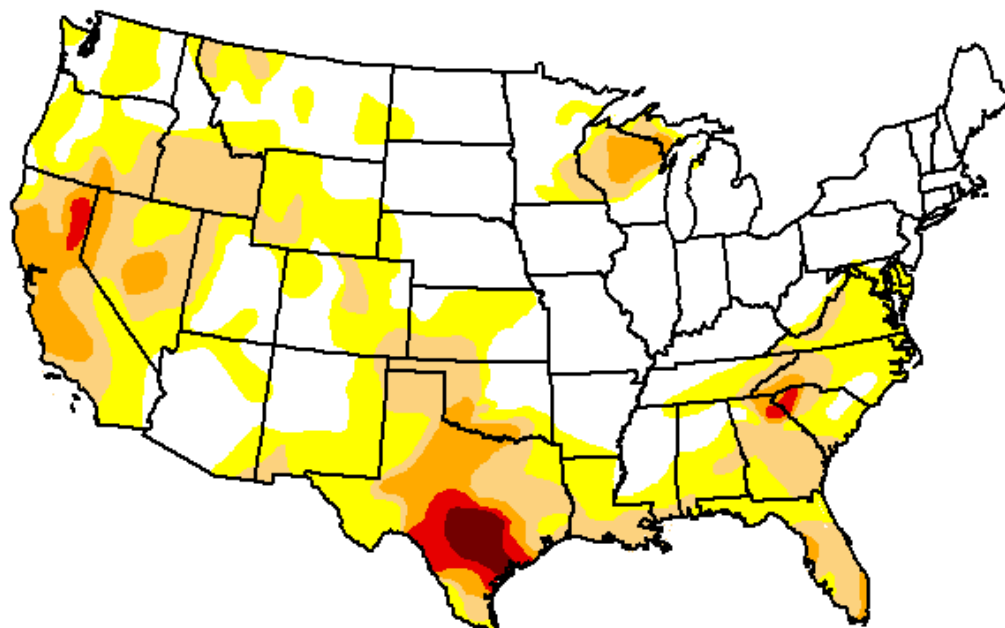
March 3, 2009

(Released Thursday, Mar. 5, 2009)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	47.07	52.93	25.69	8.70	2.29	0.85
Last Week <i>2/24/2009</i>	50.35	49.65	24.01	8.99	2.71	0.75
3 Months Ago <i>12/2/2008</i>	51.76	48.24	21.62	7.91	2.12	0.62
Start of Calendar Year <i>12/30/2008</i>	58.21	41.79	19.19	6.17	1.24	0.37
Start of Water Year <i>9/30/2008</i>	54.10	45.90	23.55	8.89	1.84	0.18
One Year Ago <i>3/4/2008</i>	51.91	48.09	28.46	15.26	3.28	0.89



Intensity:

 D0 Abnormally Dry	 D3 Extreme Drought
 D1 Moderate Drought	 D4 Exceptional Drought
 D2 Severe Drought	

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author(s):

Richard Tinker

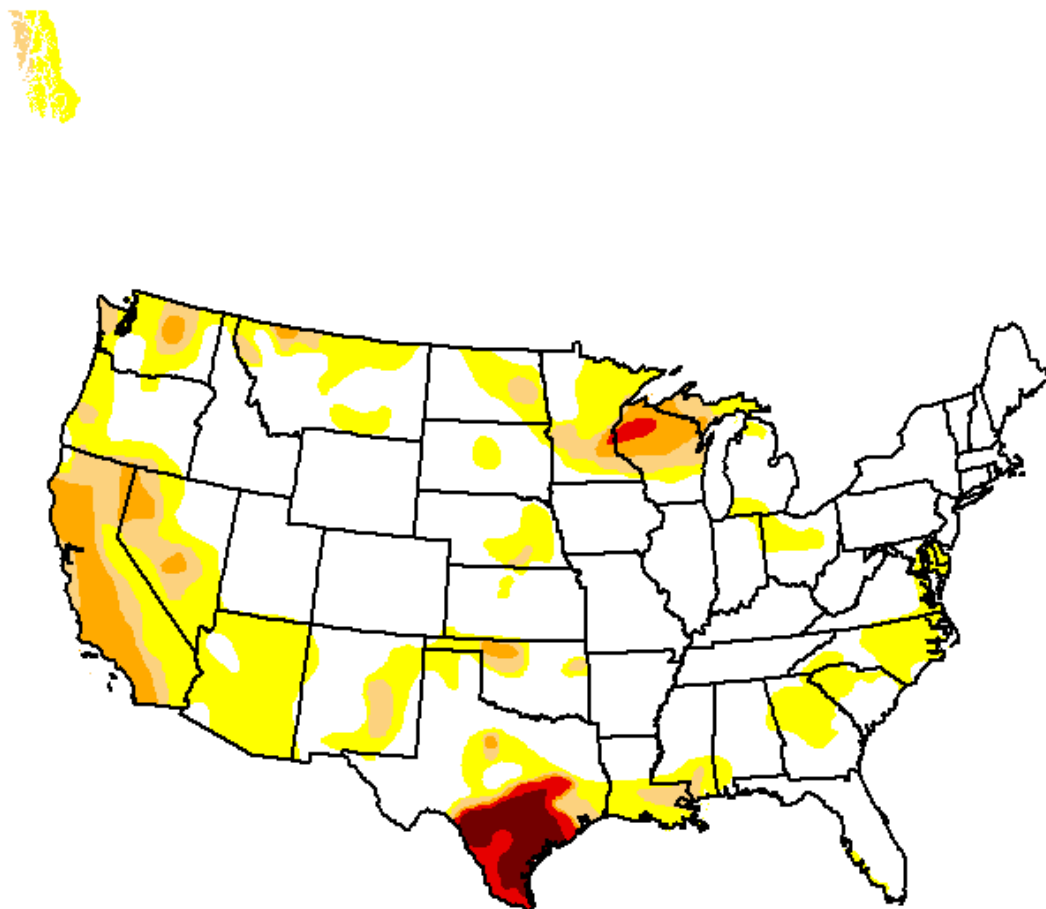
CPC/NOAA/NWS/NCEP



<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor CONUS

August 4, 2009
(Released Thursday, Aug. 6, 2009)
Valid 7 a.m. EST



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	65.53	34.47	12.96	6.76	2.56	1.48
Last Week <i>7/28/2009</i>	64.89	35.11	13.84	6.81	2.18	1.65
3 Months Ago <i>5/5/2009</i>	60.91	39.09	17.24	7.38	2.12	0.86
Start of Calendar Year <i>12/30/2008</i>	58.21	41.79	19.19	6.17	1.24	0.37
Start of Water Year <i>9/30/2008</i>	54.10	45.90	23.55	8.89	1.84	0.18
One Year Ago <i>8/5/2008</i>	46.84	53.16	28.20	12.98	4.35	0.96

Intensity:

D0 Abnormally Dry	D3 Extreme Drought
D1 Moderate Drought	D4 Exceptional Drought
D2 Severe Drought	

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author(s):

Mark Svoboda
National Drought Mitigation Center



<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor

CONUS

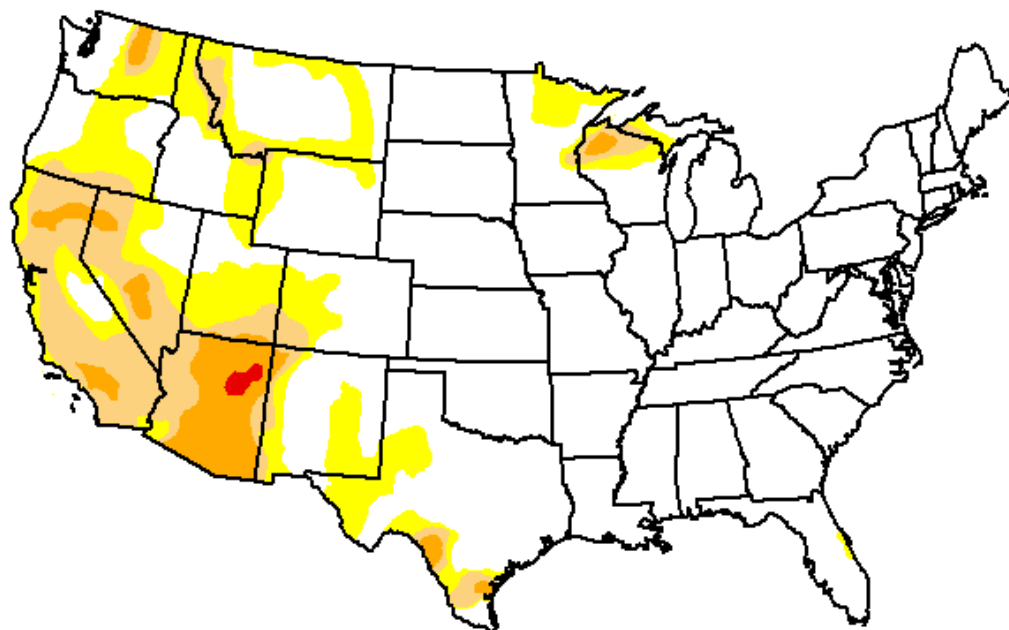
January 5, 2010

(Released Thursday, Jan. 7, 2010)

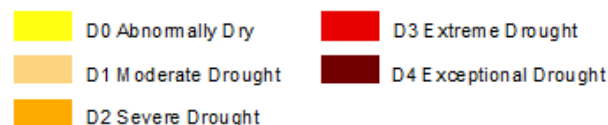
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	72.07	27.93	13.24	4.22	0.19	0.00
Last Week <i>12/29/2009</i>	72.07	27.93	12.40	4.24	0.19	0.00
3 Months Ago <i>10/6/2009</i>	66.07	33.93	14.58	5.68	0.74	0.13
Start of Calendar Year <i>12/29/2009</i>	72.07	27.93	12.40	4.24	0.19	0.00
Start of Water Year <i>9/29/2009</i>	63.99	36.01	14.98	6.18	1.30	0.28
One Year Ago <i>1/6/2009</i>	57.72	42.28	19.20	5.93	1.21	0.37



Intensity:



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author(s):

Mark Svoboda

National Drought Mitigation Center



<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor CONUS

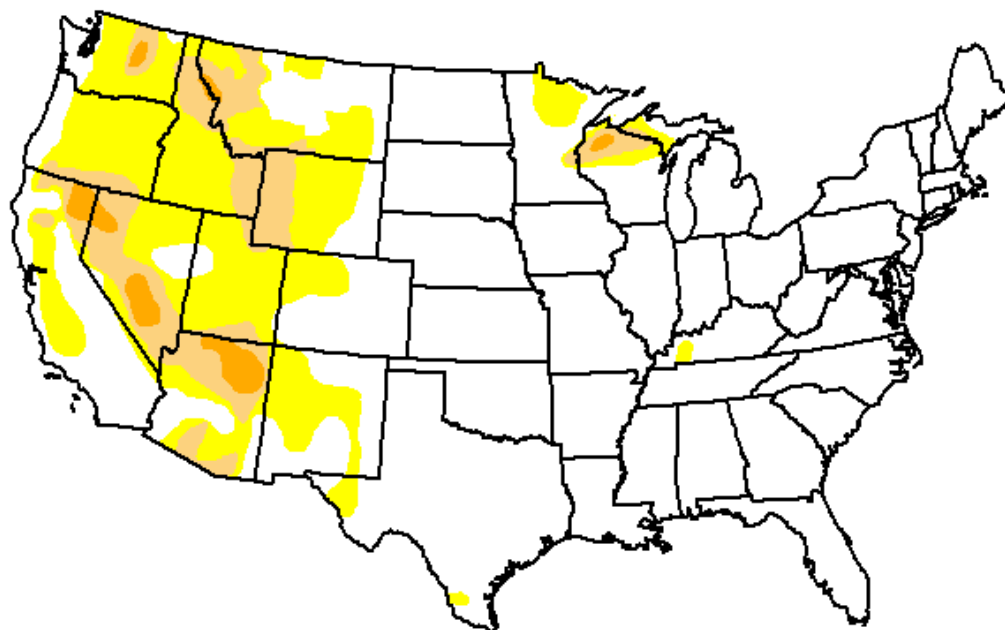
March 2, 2010

(Released Thursday, Mar. 4, 2010)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	72.33	27.67	8.83	1.56	0.00	0.00
Last Week <i>2/23/2010</i>	71.86	28.14	9.03	1.59	0.00	0.00
3 Months Ago <i>12/1/2009</i>	72.91	27.09	13.11	5.22	0.47	0.00
Start of Calendar Year <i>12/29/2009</i>	72.07	27.93	12.40	4.24	0.19	0.00
Start of Water Year <i>9/29/2009</i>	63.99	36.01	14.98	6.18	1.30	0.28
One Year Ago <i>3/3/2009</i>	47.07	52.93	25.69	8.70	2.29	0.85



Intensity:

 D0 Abnormally Dry	 D3 Extreme Drought
 D1 Moderate Drought	 D4 Exceptional Drought
 D2 Severe Drought	

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author(s):

Richard Tinker

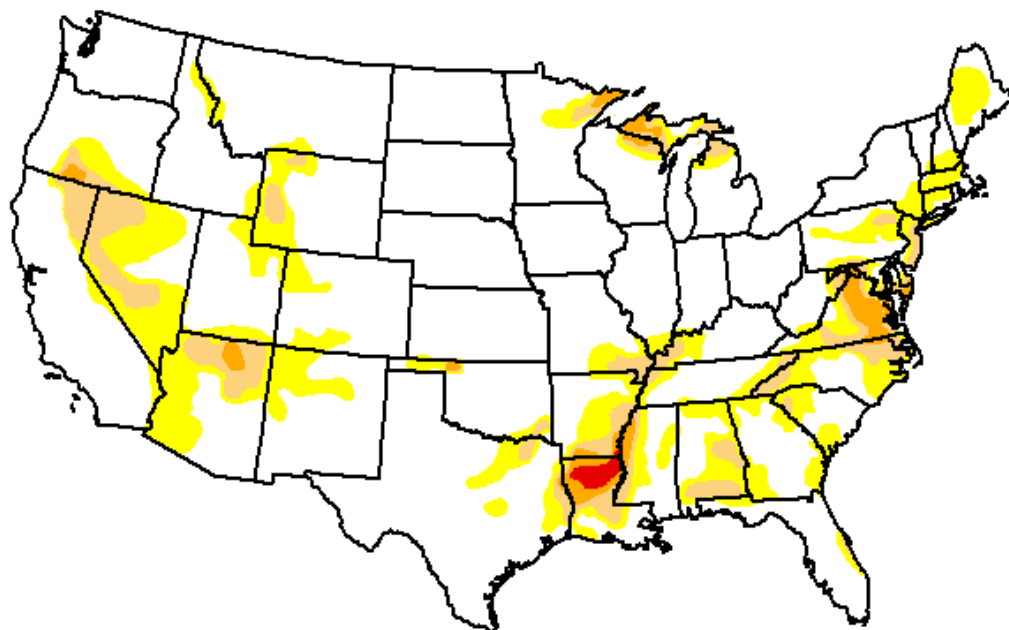
CPC/NOAA/NWS/NCEP



<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor CONUS

By August 2010, Montana was essentially free from drought.



August 3, 2010




(Released Thursday, Aug. 5, 2010)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	75.51	24.49	8.18	1.97	0.30	0.00
Last Week <i>7/27/2010</i>	74.30	25.70	8.95	1.84	0.28	0.00
3 Months Ago <i>5/4/2010</i>	68.58	31.42	10.86	2.62	0.00	0.00
Start of Calendar Year <i>12/29/2009</i>	72.07	27.93	12.40	4.24	0.19	0.00
Start of Water Year <i>9/29/2009</i>	63.99	36.01	14.98	6.18	1.30	0.28
One Year Ago <i>8/4/2009</i>	65.53	34.47	12.96	6.76	2.56	1.48

Intensity:

 D0 Abnormally Dry	 D3 Extreme Drought
 D1 Moderate Drought	 D4 Exceptional Drought
 D2 Severe Drought	

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author(s):

David Miskus

NOAA/NWS/NCEP/CPC



<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor CONUS

January 4, 2011

(Released Thursday, Jan. 6, 2011)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	60.50	39.50	21.74	8.50	2.60	0.00
Last Week <i>12/28/2010</i>	59.05	40.95	23.75	9.06	2.36	0.00
3 Months Ago <i>10/5/2010</i>	63.64	36.36	11.73	2.71	0.32	0.00
Start of Calendar Year <i>1/4/2011</i>	60.50	39.50	21.74	8.50	2.60	0.00
Start of Water Year <i>9/28/2010</i>	60.05	39.95	13.16	3.09	0.30	0.00
One Year Ago <i>1/5/2010</i>	72.07	27.93	13.24	4.22	0.19	0.00

Intensity:

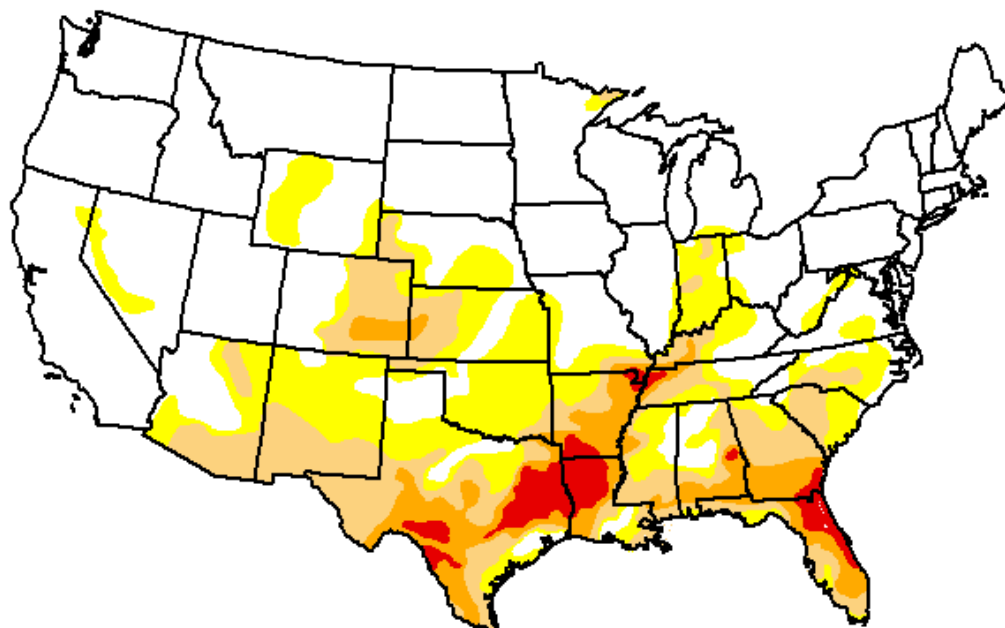
 D0 Abnormally Dry	 D3 Extreme Drought
 D1 Moderate Drought	 D4 Exceptional Drought
 D2 Severe Drought	

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author(s):

Anthony Artusa

NOAA/NWS/NCEP/CPC



<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor CONUS

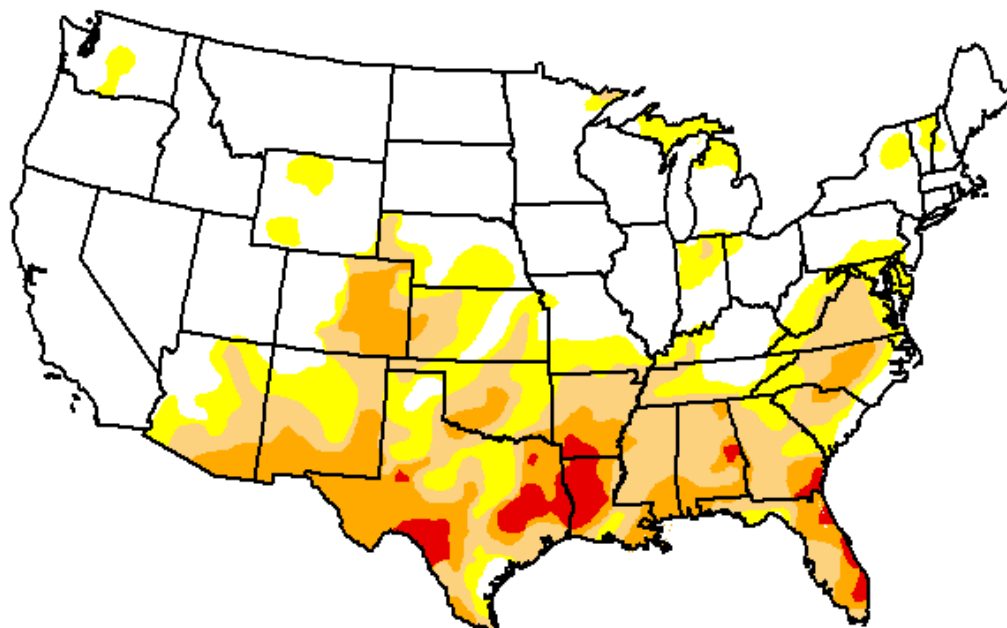
March 1, 2011

(Released Thursday, Mar. 3, 2011)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	57.03	42.97	27.92	12.47	2.30	0.00
Last Week <i>2/22/2011</i>	56.18	43.82	28.22	11.43	2.07	0.00
3 Months Ago <i>11/30/2010</i>	60.26	39.74	16.67	6.03	0.79	0.00
Start of Calendar Year <i>1/4/2011</i>	60.50	39.50	21.74	8.50	2.60	0.00
Start of Water Year <i>9/28/2010</i>	60.05	39.95	13.16	3.09	0.30	0.00
One Year Ago <i>3/2/2010</i>	72.33	27.67	8.83	1.56	0.00	0.00



Intensity:

 D0 Abnormally Dry	 D3 Extreme Drought
 D1 Moderate Drought	 D4 Exceptional Drought
 D2 Severe Drought	

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author(s):

Laura Edwards

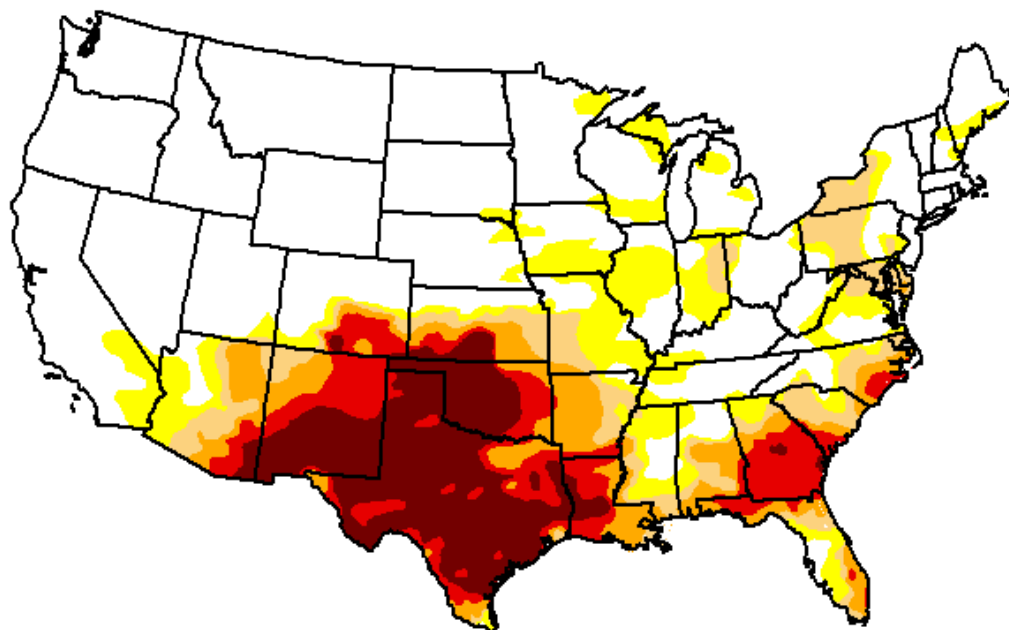
Western Regional Climate Center



<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor CONUS

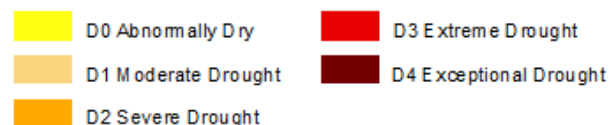
August 2, 2011
(Released Thursday, Aug. 4, 2011)
Valid 7 a.m. EST



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	54.99	45.01	32.34	25.18	18.29	10.92
Last Week 7/26/2011	59.11	40.89	29.50	23.86	18.19	11.04
3 Months Ago 5/3/2011	66.22	33.78	26.39	19.26	11.66	3.12
Start of Calendar Year 1/4/2011	60.50	39.50	21.74	8.50	2.60	0.00
Start of Water Year 9/28/2010	60.05	39.95	13.16	3.09	0.30	0.00
One Year Ago 8/3/2010	75.51	24.49	8.18	1.97	0.30	0.00

Intensity:



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author(s):
Brad Rippey
U.S. Department of Agriculture



<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor CONUS

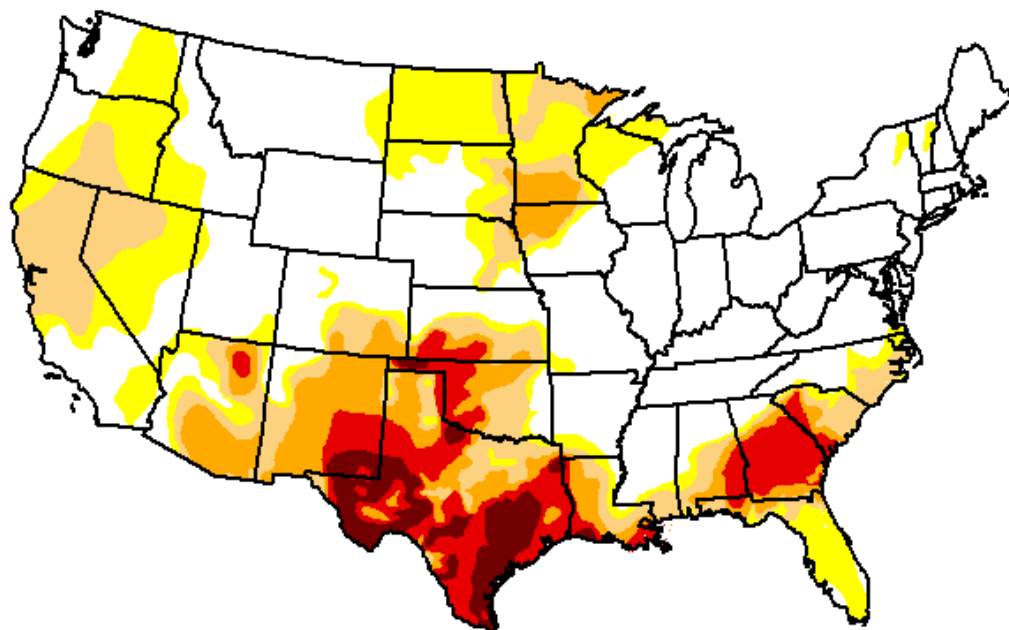
January 3, 2012

(Released Thursday, Jan. 5, 2012)

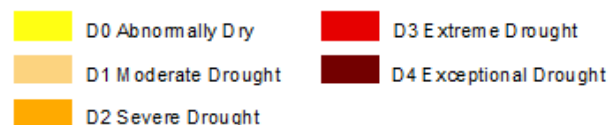
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	50.41	49.59	31.90	18.83	10.18	3.32
Last Week <i>12/27/2011</i>	50.89	49.11	28.49	18.95	10.01	3.31
3 Months Ago <i>10/4/2011</i>	55.13	44.87	30.00	23.76	17.99	11.69
Start of Calendar Year <i>1/3/2012</i>	50.41	49.59	31.90	18.83	10.18	3.32
Start of Water Year <i>9/27/2011</i>	56.45	43.55	29.13	23.44	17.80	11.37
One Year Ago <i>1/4/2011</i>	60.50	39.50	21.74	8.50	2.60	0.00



Intensity:



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author(s):

Brad Rippey

U.S. Department of Agriculture



<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor CONUS

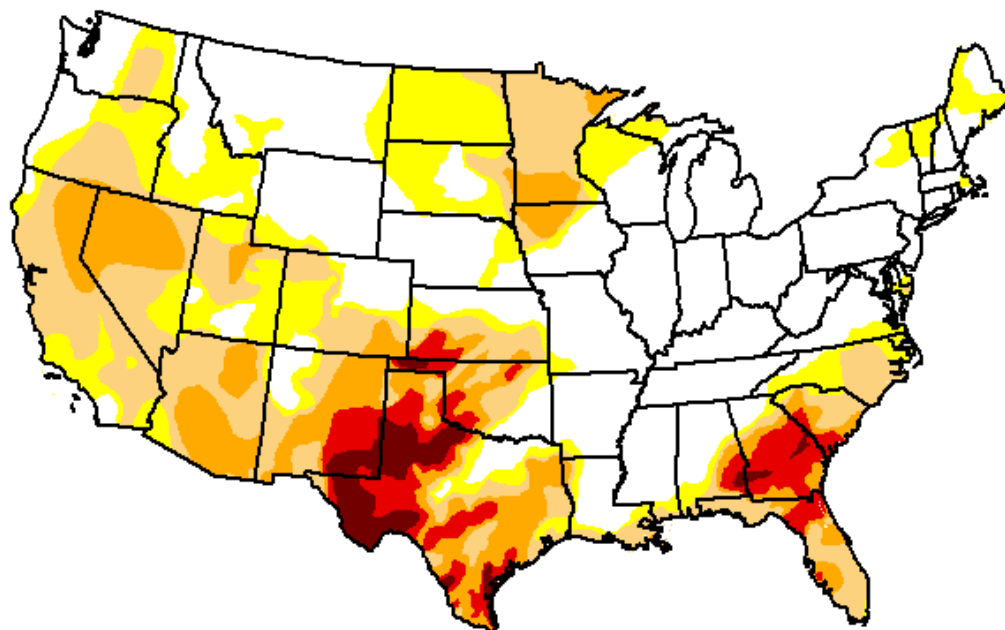
March 6, 2012

(Released Thursday, Mar. 8, 2012)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	42.81	57.19	39.02	19.30	7.24	2.44
Last Week <i>2/28/2012</i>	42.48	57.52	38.66	19.50	7.63	2.50
3 Months Ago <i>12/6/2011</i>	59.28	40.72	28.17	21.04	13.82	4.80
Start of Calendar Year <i>1/3/2012</i>	50.41	49.59	31.90	18.83	10.18	3.32
Start of Water Year <i>9/27/2011</i>	56.45	43.55	29.13	23.44	17.80	11.37
One Year Ago <i>3/8/2011</i>	59.25	40.75	27.48	12.56	2.68	0.00



Intensity:

 D0 Abnormally Dry	 D3 Extreme Drought
 D1 Moderate Drought	 D4 Exceptional Drought
 D2 Severe Drought	

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author(s):

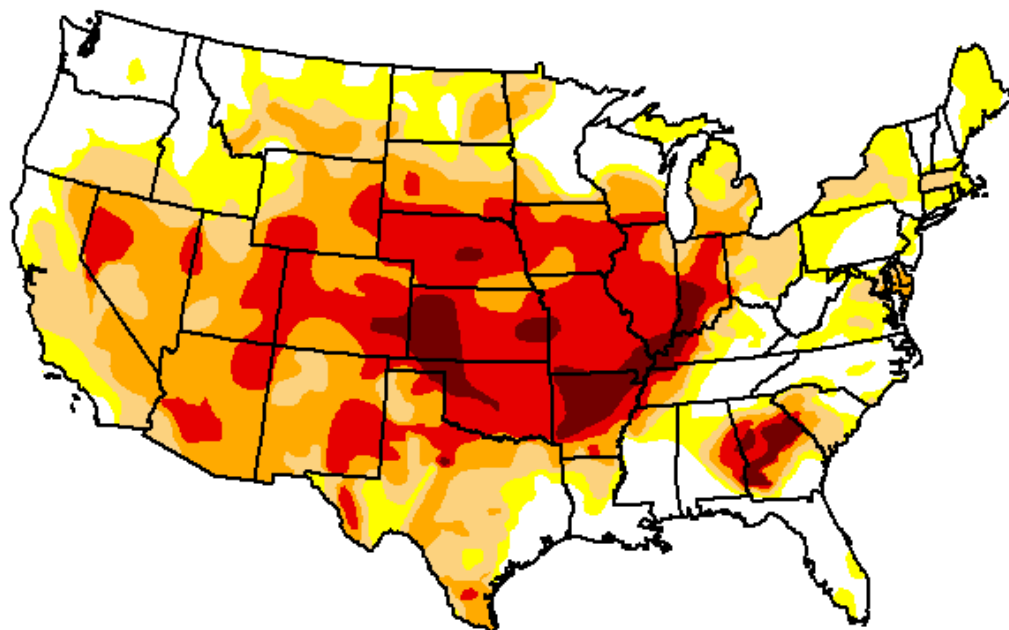
*Michael Brewer
NCDC/NOAA*



<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor CONUS

By August 2012 moderate to severe drought encompassed the southern half of the state.



August 7, 2012

(Released Thursday, Aug. 9, 2012)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	21.86	78.14	62.46	46.01	24.14	4.21
Last Week <i>7/31/2012</i>	20.62	79.38	62.91	45.57	22.27	3.01
3 Months Ago <i>5/8/2012</i>	43.88	56.12	35.88	19.65	6.77	1.61
Start of Calendar Year <i>1/3/2012</i>	50.41	49.59	31.90	18.83	10.18	3.32
Start of Water Year <i>9/27/2011</i>	56.45	43.55	29.13	23.44	17.80	11.37
One Year Ago <i>8/9/2011</i>	55.01	44.99	32.86	24.74	18.48	11.46

Intensity:



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author(s):

Mark Svoboda

National Drought Mitigation Center



<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor CONUS

January 1, 2013




(Released Thursday, Jan. 3, 2013)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	27.22	72.78	61.09	42.05	21.31	6.75
Last Week <i>12/25/2012</i>	26.16	73.84	61.82	42.45	21.60	6.73
3 Months Ago <i>10/2/2012</i>	24.10	75.90	64.58	40.07	20.12	6.07
Start of Calendar Year <i>1/1/2013</i>	27.22	72.78	61.09	42.05	21.31	6.75
Start of Water Year <i>9/25/2012</i>	23.41	76.59	65.45	42.12	21.48	6.12
One Year Ago <i>1/3/2012</i>	50.41	49.59	31.90	18.83	10.18	3.32

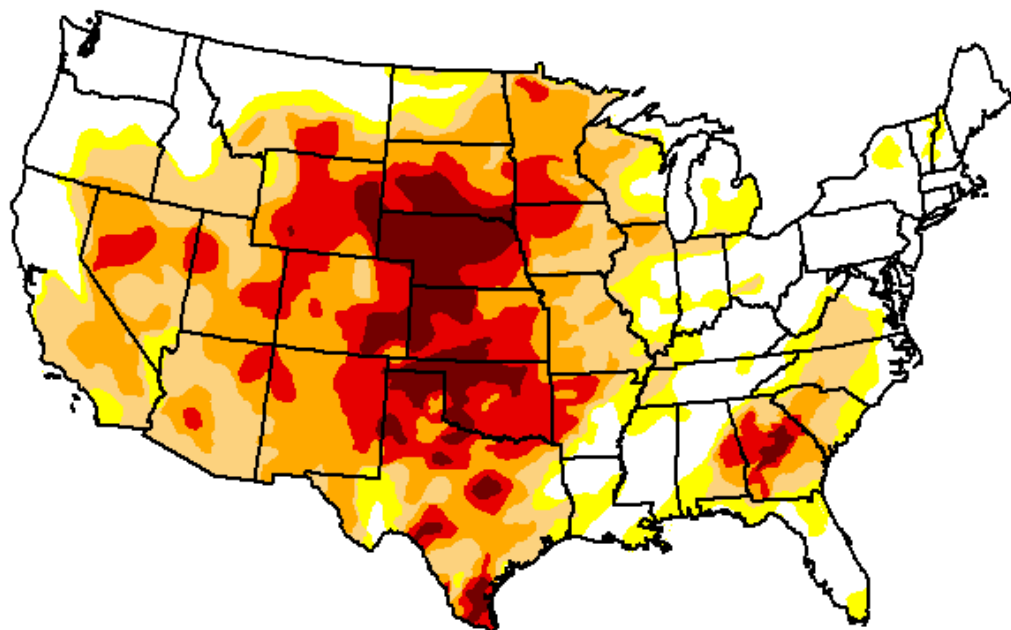
Intensity:

 D0 Abnormally Dry	 D3 Extreme Drought
 D1 Moderate Drought	 D4 Exceptional Drought
 D2 Severe Drought	

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author(s):

*Richard Heim
NCDC/NOAA*



<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor CONUS

March 5, 2013

(Released Thursday, Mar. 7, 2013)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	34.33	65.67	53.34	36.44	17.04	5.45
Last Week <i>2/26/2013</i>	33.62	66.38	54.17	36.35	16.95	5.45
3 Months Ago <i>12/4/2012</i>	23.84	76.16	62.37	42.22	20.63	6.49
Start of Calendar Year <i>1/1/2013</i>	27.22	72.78	61.09	42.05	21.31	6.75
Start of Water Year <i>9/25/2012</i>	23.41	76.59	65.45	42.12	21.48	6.12
One Year Ago <i>3/6/2012</i>	42.81	57.19	39.02	19.30	7.24	2.44

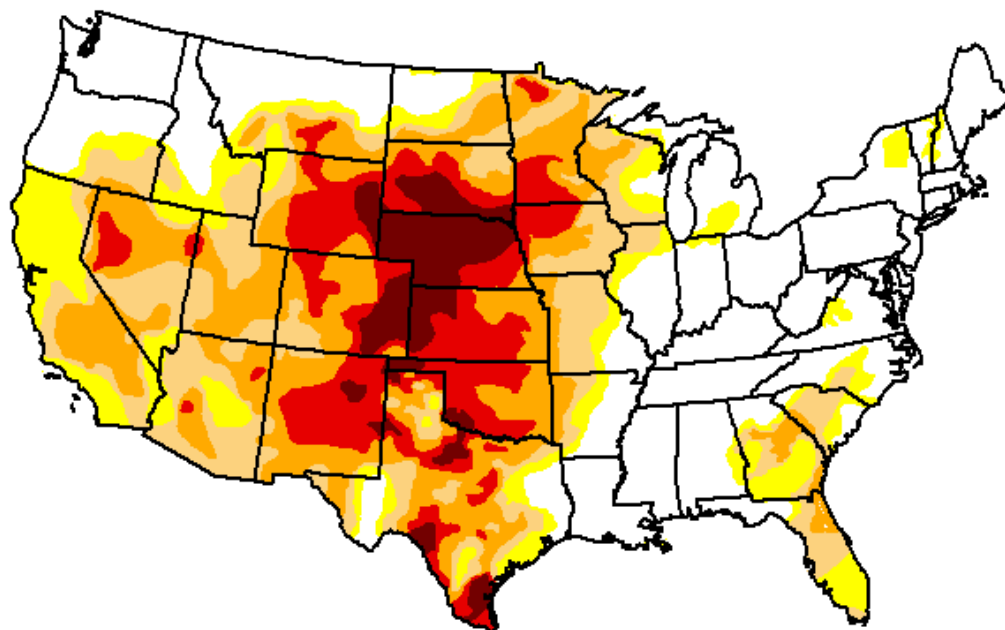
Intensity:

 D0 Abnormally Dry	 D3 Extreme Drought
 D1 Moderate Drought	 D4 Exceptional Drought
 D2 Severe Drought	

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author(s):

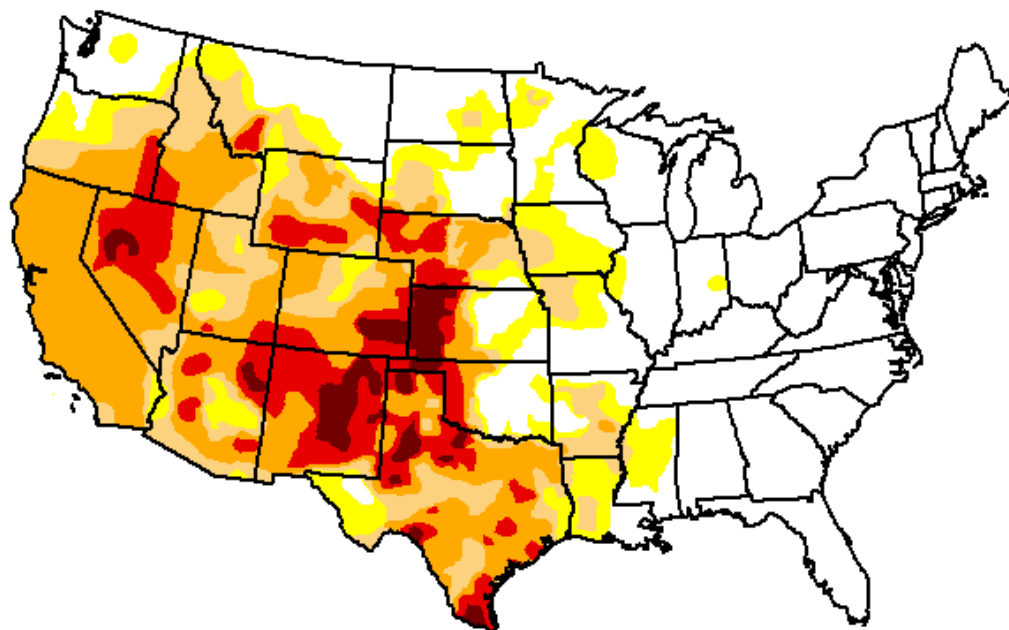
*Matthew Rosenkrans
CPC/NCEP/NWS/NOAA*



<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor CONUS





August 6, 2013
(Released Thursday, Aug. 8, 2013)
Valid 7 a.m. EST



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	42.60	57.40	45.49	32.32	11.98	2.77
Last Week <i>7/30/2013</i>	42.77	57.23	45.64	32.44	11.80	3.17
3 Months Ago <i>5/7/2013</i>	37.58	62.42	48.06	32.88	14.12	4.38
Start of Calendar Year <i>1/1/2013</i>	27.22	72.78	61.09	42.05	21.31	6.75
Start of Water Year <i>9/25/2012</i>	23.41	76.59	65.45	42.12	21.48	6.12
One Year Ago <i>8/7/2012</i>	21.86	78.14	62.46	46.01	24.14	4.21

Intensity:

 D0 Abnormally Dry	 D3 Extreme Drought
 D1 Moderate Drought	 D4 Exceptional Drought
 D2 Severe Drought	

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author(s):

Brian Fuchs

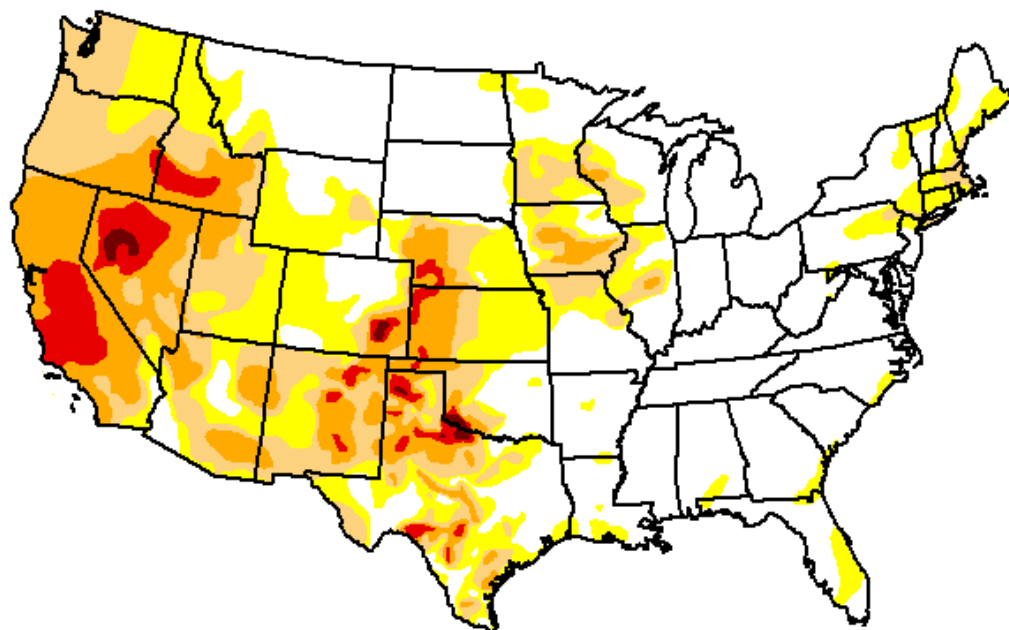
National Drought Mitigation Center



<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor CONUS

By January 2014, much of the state was once again free of drought.



January 7, 2014

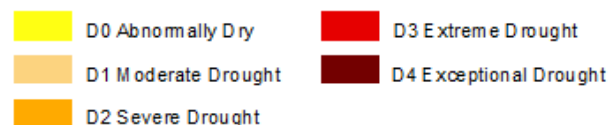
(Released Thursday, Jan. 9, 2014)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	46.64	53.36	33.22	17.12	4.13	0.37
Last Week <i>12/31/2013</i>	48.24	51.76	30.95	16.67	3.96	0.37
3 Months Ago <i>10/6/2013</i>	42.23	57.77	38.59	19.60	2.91	0.29
Start of Calendar Year <i>12/31/2013</i>	48.24	51.76	30.95	16.67	3.96	0.37
Start of Water Year <i>10/1/2013</i>	39.57	60.43	41.21	20.70	3.06	0.29
One Year Ago <i>1/8/2013</i>	28.26	71.74	60.26	41.71	20.80	6.70

Intensity:



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author(s):

Mark Svoboda

National Drought Mitigation Center



<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor CONUS

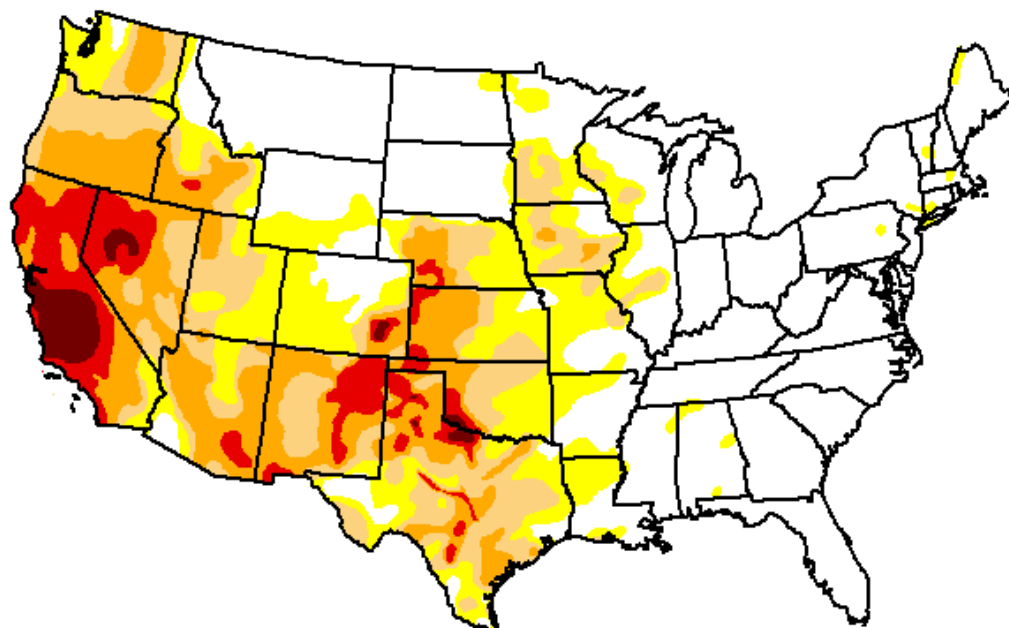
March 4, 2014

(Released Thursday, Mar. 6, 2014)



Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	46.53	53.47	35.85	21.56	7.40	1.57
Last Week <i>2/25/2014</i>	45.89	54.11	36.08	21.54	7.65	1.76
3 Months Ago <i>12/3/2013</i>	44.55	55.45	30.59	16.50	3.82	0.39
Start of Calendar Year <i>12/31/2013</i>	48.24	51.76	30.95	16.67	3.96	0.37
Start of Water Year <i>10/1/2013</i>	39.57	60.43	41.21	20.70	3.06	0.29
One Year Ago <i>3/5/2013</i>	34.33	65.67	53.34	36.44	17.04	5.45



Intensity:

 D0 Abnormally Dry	 D3 Extreme Drought
 D1 Moderate Drought	 D4 Exceptional Drought
 D2 Severe Drought	

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author(s):

Brad Rippey

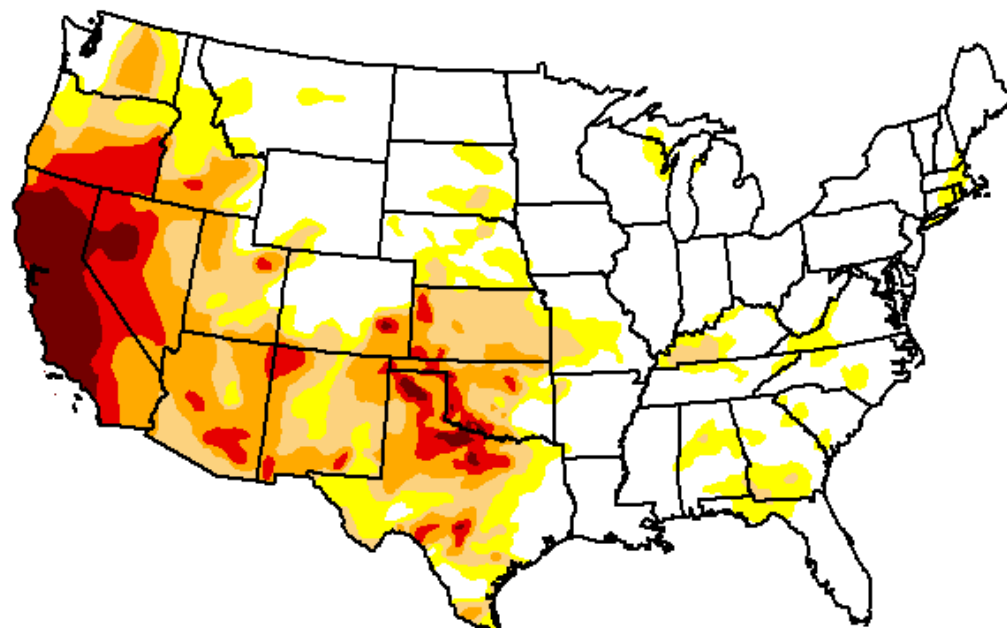
U.S. Department of Agriculture



<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor CONUS

August 5, 2014
(Released Thursday, Aug. 7, 2014)
Valid 8 a.m. EDT



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	52.44	47.56	33.94	22.19	10.19	3.84
Last Week <i>7/29/2014</i>	52.50	47.50	34.06	22.77	10.60	3.90
3 Months Ago <i>5/6/2014</i>	49.33	50.67	40.06	28.34	14.49	4.45
Start of Calendar Year <i>12/31/2013</i>	48.24	51.76	30.95	16.67	3.96	0.37
Start of Water Year <i>10/1/2013</i>	39.57	60.43	41.21	20.70	3.06	0.29
One Year Ago <i>8/6/2013</i>	42.60	57.40	45.49	32.32	11.98	2.77

Intensity:

D0 Abnormally Dry	D3 Extreme Drought
D1 Moderate Drought	D4 Exceptional Drought
D2 Severe Drought	

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author(s):

Brad Rippey
U.S. Department of Agriculture



<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor CONUS

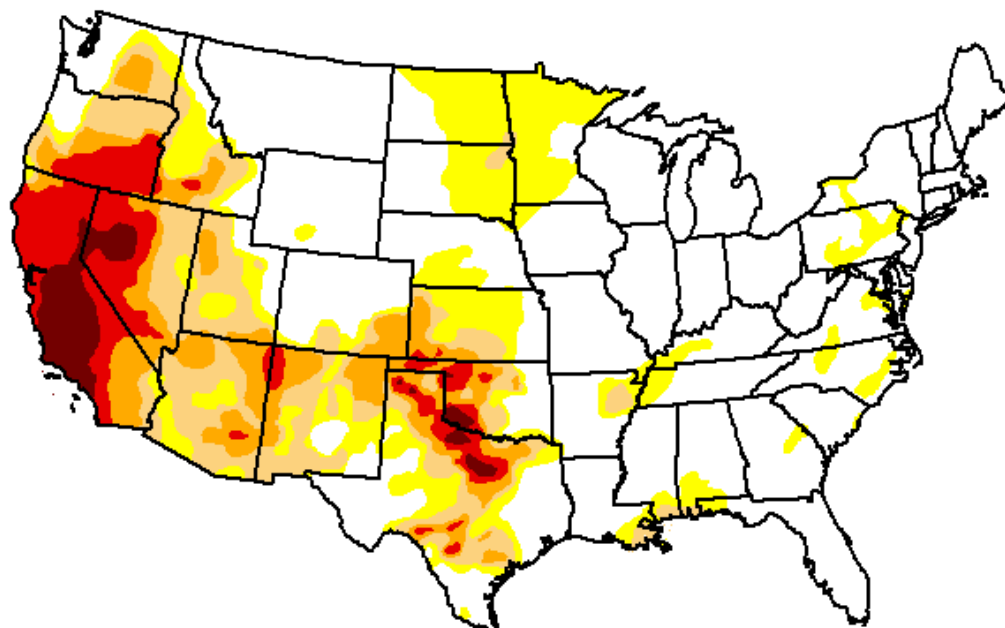
January 6, 2015

(Released Thursday, Jan. 8, 2015)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	55.85	44.15	28.10	16.76	8.84	2.48
Last Week <i>12/30/2014</i>	53.20	46.80	28.68	16.93	8.96	2.54
3 Months Ago <i>10/7/2014</i>	53.03	46.97	30.51	18.66	9.46	3.87
Start of Calendar Year <i>12/30/2014</i>	53.20	46.80	28.68	16.93	8.96	2.54
Start of Water Year <i>9/30/2014</i>	52.22	47.78	30.57	18.66	9.41	3.85
One Year Ago <i>1/7/2014</i>	46.64	53.36	33.22	17.12	4.13	0.37



Intensity:

 D0 Abnormally Dry	 D3 Extreme Drought
 D1 Moderate Drought	 D4 Exceptional Drought
 D2 Severe Drought	

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author(s):

Brad Rippey

U.S. Department of Agriculture

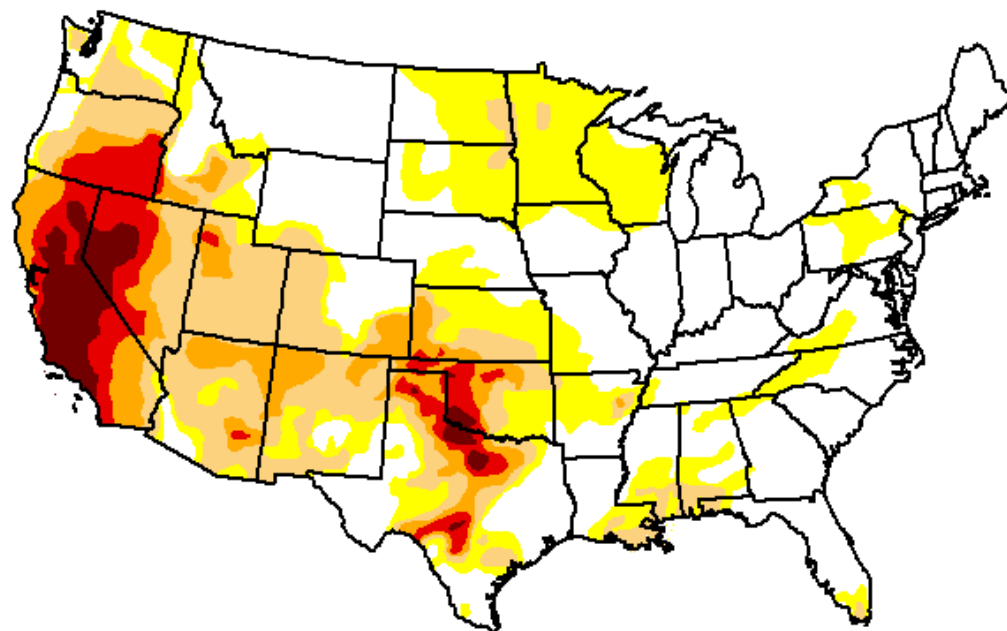


<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor

CONUS

March 10, 2015
(Released Thursday, Mar. 12, 2015)
 Valid 7 a.m. EST



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	47.36	52.64	31.60	15.73	8.39	3.17
Last Week <i>3/3/2015</i>	47.49	52.51	31.88	15.66	8.43	3.21
3 Months Ago <i>12/9/2014</i>	51.32	48.68	29.84	17.09	8.94	3.69
Start of Calendar Year <i>12/30/2014</i>	53.20	46.80	28.68	16.93	8.96	2.54
Start of Water Year <i>9/30/2014</i>	52.22	47.78	30.57	18.66	9.41	3.85
One Year Ago <i>3/11/2014</i>	47.91	52.09	35.74	21.71	7.70	1.66

Intensity:



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author(s):

Matthew Rosencrans
 CPC/NCEP/NWS/NOAA



<http://droughtmonitor.unl.edu/>

How bad was the drought in the early 2000s?

Standardized Precipitation Index

CLI

#1

Click on SPI or index of choice

Selected Atlas Station: 241044 (BOZEMAN MONTANA SU)

Select New Station

Station Climate Deciles **SPI** SPEI PDSI SC-PDSI Drought Monitor Drought Periods Compare Indices Frequencies

#3

Click on table

BOZEMAN MONTANA SU (241044) for the 12 Month timestep(s) between 1/1/2000 and 12/31/2009 and aggregated by month.

Date

1/1/2000 to 12/31/2009

2000s

Station start date: 1/1/1908

Aggregate

Month

Timestep

Select one or more timesteps

1 month
2 month
3 month
4 month
5 month
6 month
7 month
8 month
9 month
10 month
11 month
12 month

#2

Set preferences

Show 100 entries

Search:

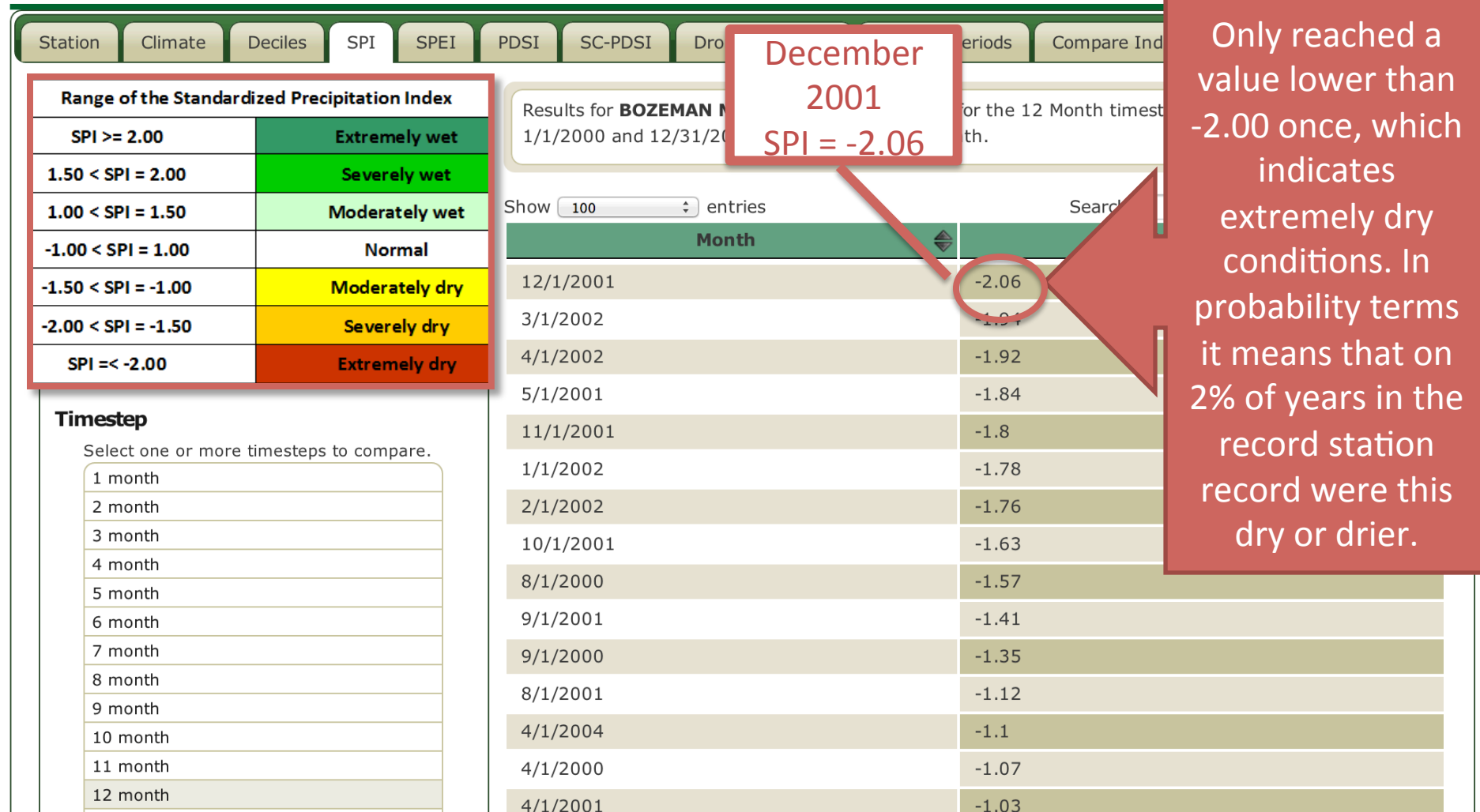
Month	12 Month
12/1/2001	-2.06
3/1/2002	-1.94
4/1/2002	-1.92
5/1/2001	-1.84
11/1/2001	-1.8
1/1/2002	-1.78
2/1/2002	-1.76
10/1/2001	-1.63
8/1/2000	-1.57
9/1/2001	-1.41
9/1/2000	-1.35
8/1/2001	-1.12
4/1/2004	-1.1
4/1/2000	-1.07
4/1/2001	-1.03

How bad was the drought in the early 2000s?

SPI Magnitude Ranking

Climate Data

Selected Atlas Station: **241044 (BOZEMAN MONTANA SU)**



How long do droughts like the early 2000s last?

Drought Periods

Climate Data

Selected Atlas Station: **241044 (BOZEMAN MONTANA SU)**

#1

Click on SPI or index of choice

Select New Station

Station Climate Deciles SPI SPEI PDSI SC-PDSI Drought Monitor Drought Periods Compare Indices Frequencies

Results for **BOZEMAN MONTANA SU (241044)** at the 12 Month timestep with a minimum drought class of -2 between 1/1/1908 and 12/31/2012.

Date

1/1/1908 to 12/31/2012

Period of Record

Station start date: 1/1/1908

Index

Select an index

SPI

SPEI

PDSI

Self-calibrated PDSI

Drought Classification

-2

Timestep

12 Month

#2
Set preferences.
Recall that the lowest SPI value were -2.06, so we are setting our index at SPI and classification at -2.

Note: the drought period ends when the index returns to zero.

Number of Droughts: 7

Longest Drought: 153 weeks

Average Duration: 75 weeks

Time in Drought: 9.67%

10 entries

Search:

Drought Start	Drought End	Duration (weeks)
1/1/2001	8/6/2002	62
1/1/1961	5/14/1962	59
5/1956	3/5/1958	66
1954	12/24/1955	85
1934	7/9/1937	153
1930	5/14/1931	51
1919	6/24/1920	52

Showing 1 to 7 of 7 entries

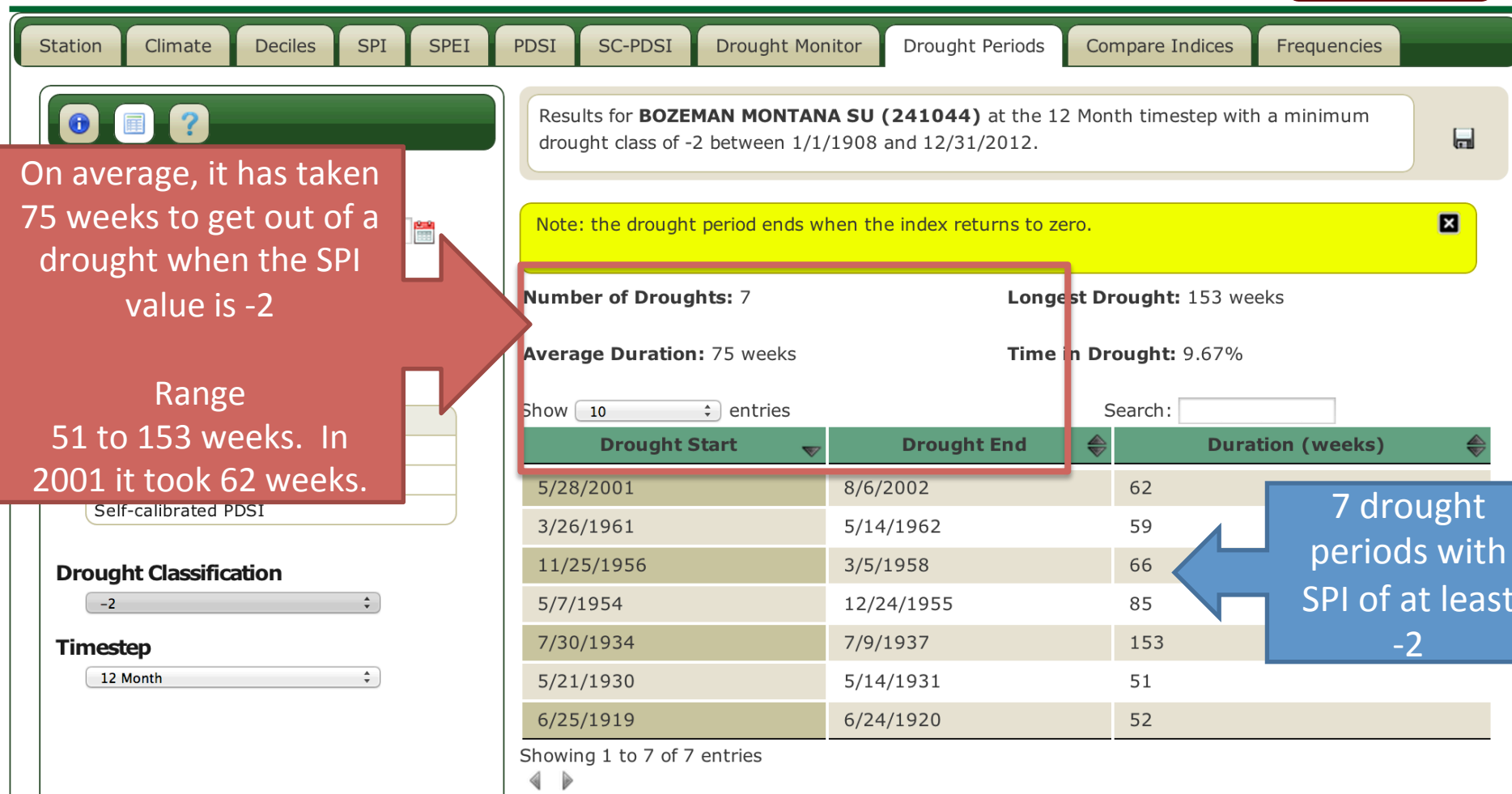
How long do droughts like the early 2000s last?

Drought Periods

Climate Data

Selected Atlas Station: **241044 (BOZEMAN MONTANA SU)**

Select New Station



How often do droughts like the early 2000s occur?

Frequencies

Climate Data

Selected Atlas Station: **241044 (BOZEMAN MONTANA SU)**

StationClimateDecilesSPISPEIPDSISC-PDSIDrought MonitorDrought Periods

Index

SPI

Aggregate

Month

Timestep

12 Month

#2

Set preferences.

We are still looking at how frequently a drought reaches SPI = -2.

Results for **BOZEMAN MONTANA SU (241044)** for the 12 Month timestep and aggregated by month.

Show 25 entries

Threshold

2.6	2	
2.4	1	
2.3	2	
2.2	4	
2	10	10.42
1.9	8	13.08
1.8	9	11.58
1.7	14	7.42
1.6	25	4.17
1.5	17	6.17
1.4	29	3.58
1.3	21	4.92
1.2	27	3.83
1.1	23	4.5

#1

Click on FREQUENCIES

The default setting is to order the SPI by positive values. We are interested in negative values so click this arrow to reverse the order.

How often do droughts like the early 2000s occur?

Frequencies

Climate Data

Selected Atlas Station: **241044 (BOZEMAN MONTANA SU)**

Select New Station

Station

Climate

Deciles

SPI

SPEI

PDSI

SC-PDSI

Drought Monitor

Drought Periods

Compare Indices

Frequencies



Index

SPI

Aggregate

Month

Timestep

12 Month

Results for **BOZEMAN MONTANA SU (241044)** for the 12 Month timestep and aggregated by month.



Show 25 entries

Search:

Threshold	Frequency	Return Period (Years)
-3.3	1	104.92
-3.1	1	104.92
-3	2	52.42
-2.9	1	104.92
-2.8	5	20.92
-2.7	4	26.17
-2.6	5	20.92
-2.5	1	104.92
-2.4	3	34.92
-2.3	4	26.17
-2.2	3	34.92
-2.1	4	26.17
-2	5	20.92
-1.9	5	20.92

A drought with SPI = -2 is an ~ 21 year event.

The background of the slide is a close-up photograph of parched, cracked soil in shades of brown and tan. The cracks are irregular and deep, creating a network of polygonal shapes across the entire frame. Some dry, straw-like debris is scattered on the surface.

Questions?

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